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Winter Feeding and its Relation to Pig Production

— By —

H. M. PEIRSON, Acting Superintendent of the Pig Industry, Wellington, and C. H. M. SORENSON, Supervisor, Taranaki District Pig Council.

THE generous rainfall and mild temperatures common to most parts of New Zealand are such that grassland farming has become common practice in most districts of the North Island. This system has undoubtedly proved successful, and each year sees a smaller acreage placed under the plough. Sufficient artificial fertiliser can, it appears, support this type of farming, but unfortunately some of our farm animals cannot be wintered this way. This perhaps has been the reason why some farmers have gone right out of pigs rather than provide crops. Seasons like the one we are experiencing at the moment bring it home forcibly that pigs can be profitably farmed in New Zealand only if there is at all times a cheap bulk feed supply. Dairy by-products supply this during the milking season, but the farmer must provide for the winter.

Different sized pigs require somewhat different treatment during the winter. The smaller the pig the more attention is necessary if a good pig is to be expected in the spring. If it is intended to keep pigs through the winter, there is first a necessity to make sure that the housing and equipment are in the best possible order; otherwise it will lead only to disappointment and loss. All pigs have at least one thing in common, the need for warm quarters at night. It may be only a pig, but if it has to sleep in a dirty, cold, damp house, just one-sixth of the total food consumed during the day is lost, because that is what it takes to create bodily warmth. This is not all—if a pig is badly fed, that lost sixth is just enough to so reduce the resistance that unthriftiness and disease make winter feeding uneconomic. If this has been your experience, don't blame the pig. Change places with him for one night. It may help you to appreciate the position from the pig's angle.

Value of Meals

It is too late this season to think of planting or sowing winter crops, but if it is the intention to winter pigs, arrangements for the purchase of meat meal and grain meals should now be made. These meals, fed in conjunction with good grazing or whatever root crops are available, will assure good healthy pigs to utilise dairy by-products when the cows again come to profit. Because meals have to be purchased, many are averse to using them. This was also true of top-dressing a few years ago. Many farmers today complain of falling returns owing to lack of artificial fertiliser. In the same sense meal is pig fertiliser, and is accepted as such by all progressive farmers as a means of increasing pig production, just as topdressing has been accepted as one of the main factors in increased butterfat production. A daily ration of meat and grain meal helps to balance the feed, and makes any crop worth almost twice as much, by reason of its greater suitability.

If it is assumed that crops have been provided for the winter feeding, then the pigs just weaned can be carried through the winter for three months with half a pound of meat-meal daily, and with half a ton of roots per pig at a feed cost of 45 lb. of meat-meal, say 6/-, and 2/6d. for roots. On this ration, pigs of 40 lb. live weight at the beginning of June will be 70 lb. by September. If, however, they get 1 lb. of meat-meal daily they will be 85 lb. by September, and if the amount of meal is increased to 1½ lb. they will be 105 lb. Half a gallon of milk in June is very desirable for these weaners, but if they are heavier by the beginning of June, say, 60 lb. live weight, the milk—always useful—is not necessary.

After pigs are from 60 to 70 lb. weight they can be said to have passed out of the baby stage, and during this time extra care in feeding is essential. It is always well to remember that the smaller the pig taken through the winter the greater the amount of care necessary. Therefore, some effort should be made to get the sows farrowing in time to correct this position. By having the second litter no later than early February these pigs can be 60 lb. by the end of May. February farrowing makes wintering in this way decidedly easier. The more advanced the pigs are by June 1, the greater the satisfaction in wintering them.

Root Crops

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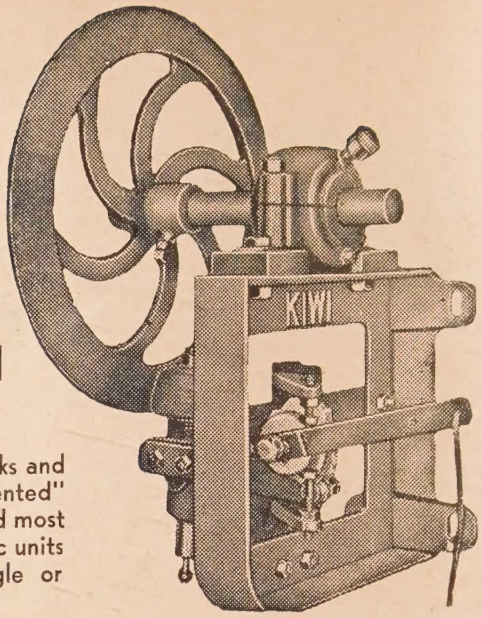

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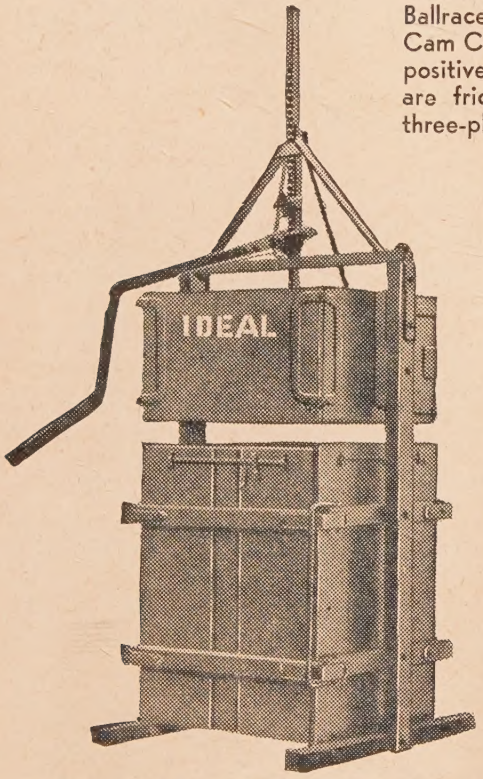

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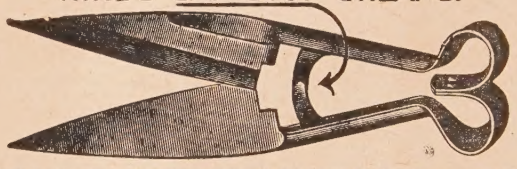

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be grown, 60 to 80 tons to the acre at 5/- per ton show as much profit from an acre as most other crops. At 60 tons to the acre, one acre of mixed roots should be enough to winter 60 pigs and provide supplies for sows and other contingencies. Sixty pigs consuming half a ton of roots per pig during the winter would absorb 30 tons, while 10 sows over the same period, consuming one and a half tons each, would account for an additional 15 tons. This would leave 15 tons to be used in late autumn for finishing porkers, or in the early spring to keep the wintered pigs going until there is enough milk.

The choice of what crop to grow is fairly wide, but generally, the crop giving the biggest yield per acre in the locality is the best for the district. Green maize, pumpkins, and carrots for autumn, sugar-beet, carrots, swedes and artichokes or mangolds for the rest of the year, would be ideal. When feeding roots in winter, see that the pigs have a clean place to feed, either concrete or wooden feeding platforms or in clean paddocks; don't ask them to dive into mud for their roots. The pig can do his part if given a chance.

The winter store pig is naturally the first baconer of the season. Quite often, because they have to be got rid of quickly to make room for new season litters, or because there are insufficient other pigs to use all the skim-milk, they are fattened with indecent haste, with the result that they are degraded for over-fatness. Especially is this true where pigs are fattened to heavy weights. On the other hand, every pig can be made a No. 1 prime by taking them on more slowly, especially over the last six weeks.

It is impossible to define just what adjustments have to be made in pig numbers and farrowing dates to do this, but it can be facilitated by having some of these roots still on hand up to November, and feeding them either to fattening pigs or breeding stock, in order to adjust the feed supply to pig numbers. It seems there are fundamental reasons behind this slow fattening of pigs that have had a check. The normal development of the animal is arrested by the winter store period with the result that when abundant feed is provided there is a tendency to deposit fat instead of lean meat.

Avoid Excess Fat

Most farmers have noticed the decided thickness of the head and neck which takes place as soon as the pigs begin to fatten, and which seems to disappear as they reach the final fattening stage. This excess of fat is still there, since such pigs have 10 to 15 per cent. more fat than those of the same weight which have grown normally without a check from birth to slaughter. Excess fat is not wanted by the trade, especially since abnormal fat tends to be associated with softness, fishiness, bad colour, rancidity, and waste. Pigs born in June and finished in December or January seldom receive the severe check the wintered pigs do, but nevertheless, they turn out improved pigs if fed as fast as possible to 70 lb., and finished off slowly. Much can be achieved in the way of improving both pork and bacon if the type for these two classes is selected when the pigs are between 80 and 100 lb. live weight. The short, stumpy pigs should be taken to pork weights, and the longer ones to bacon weights. A useful guide is to select pigs less than 27 inches at 70 lb. carcase weight (100 lb. alive) from the root of the tail along the back to a line behind the ears for pork, and pigs of more than 27 inches for bacon, taking into consideration such aspects as fine shoulders and a good conformation for bacon. We need as much pig-meat as possible today, but as few farmers can produce all bacon, extra weight on the pig with the right conformation is desirable.

Farmers are entitled to the assistance and advice of the District Pig Council Supervisors. Pig producers have provided the funds to enable these Councils to be set up, and all farmers are urged to take every advantage of these facilities. Applications for assistance should be made to the Department of Agriculture or to District Supervisors as follows:—Whangarei (Box 131); Pukekohe (Box 32); Whakatane (Box 12); Gisborne (Box 316); New Plymouth (Box 131); Palmerston North (Box 80); Dunedin (Box 693); Christchurch (Box 639); Hamilton, Wesley Chambers.

Men who make pig-farming pay agree that pigs cannot be farmed for profit by letting them look after themselves. Where this state of affairs exists there is a shameful waste of dairy by-products in the spring and summer months, and an unusually large consignment of unfinished pigs is sent forward in the autumn. These unfinished pigs constitute a serious menace to the farmer's price, as someone has to pay for the cartage, slaughtering, and handling of these second-grade pigs, and in the main that someone is the farmer, because the first-grade pigs must carry this drag on the industry. If the farmer sending forward for slaughter this type of carcase could be induced to visit any of the killing centres, he would quickly appreciate why it is impossible to regard this type of finish as satisfactory. The abnormally dry season we have experienced will no doubt increase the percentage of these lightweight carcases this autumn. This is most unfortunate, especially when it is realised that many of these pigs could have been carried to much higher weights, if producers could be induced to include the growing of roots for pigs in their annual farm routine.

Grow Roots

There is at least one very good reason for home-grown feeds. At the present time imported grain meals are becoming increasingly difficult to obtain, and there is every reason to believe that the position will not improve next year.

It will be appreciated that every acre of crops grown for winter feeding reduces the necessity of importing at least 2 tons of grain, and as production of pig-meat in any one season is dependent upon the winter feed supply available, it must be obvious that any increase in pig production centres around the provision of winter feed.

It is not generally realised that one-third of the pigs produced, in addition to breeding stock, have to be carried through the winter months, in order that the by-products of the dairy industry may be economically used.

The only sure way of even maintaining present production of pig-meat is by the provision of winter crops, supplemented with such concentrates (meat meal in particular) as are manufactured in New Zealand. The present is not too early to plan for next season's crops. Regrets will never make up for lost opportunities. The annual decline in pig production over the past three years can only mean that New Zealand's post-war policy will be seriously affected if this drift is not arrested now.

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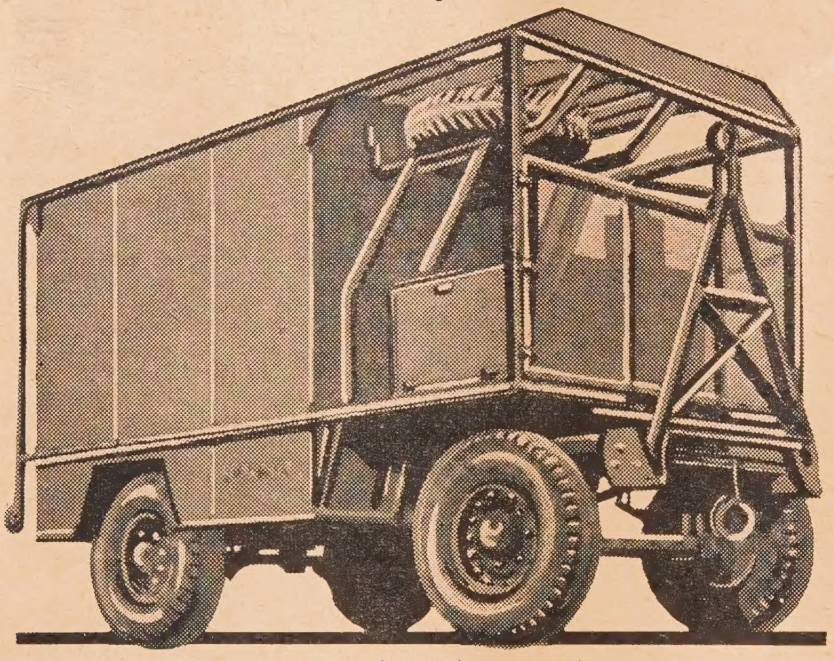

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The growing of cereals for greenfeed in many districts of New Zealand is necessitated largely by the fact that climate and soil conditions are such that there is not an adequate grass supply during the whole year. The factors limiting this even distribution of grass growth are temperature, rainfall, and the moisture retaining power of the soil. The declining popularity of greenfeed cereals, especially in the North Island, is due to better pasture management and the use of pasture strains of longer seasonal growth.

— By —

A. F. GREENALL,
Instructor in Agriculture,
Balclutha.

THE problem during certain seasons of the year is the provision of suitable succulent green leafage to stimulate milk production of cows and sheep, to fatten lambs during dry conditions, to flush ewes preparatory to putting out the ram, and to provide a welcome change from roughage and roots during winter months. Cereals are also used for wintering broken-mouthed ewes, and where root-growing is risky, due to drought or ravages of insect pests.

For this purpose certain cereals are used, either alone or in mixture, the distribution of these cereals being affected by the purpose for which they are required, the time at which they are required and the soil type and climatic conditions prevailing in any particular locality. Oats, maize, barley, wheat, ryecorn, millet and sorghum are the cereals used in this connection, the use of maize, millet and sorghum being almost entirely confined to the North Island.

Approximately 80,000 acres per annum, representing 5 per cent. of the total cultivated area, are sown expressly for greenfeed, while a large proportion of autumn sown oats and wheat is grazed prior to closing up for harvesting.

Oats

The latest summary shows that the total area of oats sown in the Dominion was 242,365 acres, and of this 64,639 acres were not harvested but used for greenfeed. A considerable proportion of the remaining 177,726 acres was fed off, but subsequently harvested for grain or chaff. Of the 64,639 acres grown for greenfeed 5,666 were grown in the North Island and 58,973 acres in the South Island, 46,501 of this latter figure being grown in Canterbury.

In the South Island oats for greenfeed are mainly confined to sheep-farming areas which have severe winters and dry summers. The time and the purpose for which such feed is required are the two factors which influence time of sowing, cultivation, and place of greenfeed oats in the rotation.

Oats for greenfeed are invariably sown after grain crops of wheat or oats, although oats are sometimes sown on ground ploughed out of lea in an endeavour to eradicate twitch or browntop, when they are regarded mainly as catch crops.

When oats are sown after stubble, cultivation is not usually intensive, though it is certain that much good would accrue from a short fallow between deep ploughing and subsequent surface cultivation. When sown on ground ploughed out of lea cultivation must, of necessity, be more thorough. The main object to be kept in mind in deciding on what cultivation should be carried out is the provision of a firm seed-bed with a fine and moist tilth underneath, and with a certain amount of rough material on the surface. Drilling is usually the most advisable method of sowing, broadcasting being resorted to only on occasions of urgency or where drills are not available.

Varieties

The varieties of oats commonly used are Algerians, Duns and Gartons. Algerians are the most useful for greenfeed, as they are fairly frost resistant, tiller well, stand close and continuous grazing up to the beginning of September, recover well after grazing, and are the most drought resistant. Algerians are also rust resistant. Low germination in the field is likely to occur if immature seed is sown, it being a more reliable practice to use one-year-old seed.

Duns are a variety that possess similar characteristics to Algerians, are more palatable, but are slower growing and do not produce the same bulk of feed.

Gartons are a more upright grower, with a broad, coarse leaf, producing a good bulk of feed, but will not stand the close and continuous grazing, and are susceptible to rust. A frost-resistant variety called Black Scotch is often used for high country sowings. Webbs Challenge and Resistance are of value in the south as a winter grazing type.

Sowing

Two bushels per acre are sown in the autumn, while three bushels is the rate in the spring, the seed being either drilled in 7 in. rows or broadcast and lightly harrowed in. Broadcasting is common in the North Island.

When oats and grass are sown the seeding is decreased by ½-1 bushel per acre. Seeding is increased on heavier types of soil. Algerians and Duns when sown in February-April are ready for grazing in two to three months' time, and may be grazed up till September when growth tends to become woody and of low feeding value. In parts of Otago and Southland oats are largely spring sown and so provide very little grazing.

The use of 1½ cwt. of superphosphate is a sound practice, two to three cwt. often being applied in many parts of the North Island. No special potash or nitrogenous fertilisers are likely to prove of value except under special circumstances.

Utilisation of Oats

Greenfeed oats are utilised mainly by sheep in late autumn, winter and spring, though cows are also grazed on oats in some of the dairying districts. An average carrying capacity from May to September is in the vicinity of seven sheep per acre. Although frequent attempts are made to milk cows and fatten sheep on greenfeed oats alone, this practice is not advisable, nor is it profitable, as such feed is deficient in certain of the essentials of milk and fat-lamb production. When used as a change or supplemented by a good run-off on grass with roots and good clover hay it is a valuable feed. It is advisable to feed off greenfeed oats in breaks, and it should be noted that once ewes have a run-off on greenfeed they are loath to return to turnips. Where oats or any similar cereal follows grass, attack by grass grub may occur and may prove serious.

Maize

The growing of maize for greenfeed is confined to the North Island dairying districts. In the latest summary the acreage in maize was 12,535, of which 5,153 acres were used for greenfeed. Approximately 60 per cent. of this area is located in the Auckland district and 25 per cent. in the Wellington district.

The sphere of usefulness of maize is essentially different from that of oats for greenfeed. Maize requires a district of high temperatures and ample rainfall for its successful culture, rich river flats being the most suitable for this crop. While oats are grown principally for grazing by sheep and dairy cows from late autumn to spring, maize is grown in the dairying districts for late summer and autumn feeding where it is cut and fed on grass paddocks, rather than fed off.

As maize is a gross feeder it does best after lea, the high humus content which is a feature of such soils being essential for high yields. Maize

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is often sown after a crop of turnips or mangolds which are fed during winter, this being a suitable preparatory crop. When maize is sown after lea the cultivation must be thorough. A skim ploughing in early spring, followed by a deep ploughing, several cultivations, discing, rolling and harrowing is what is required. Provided the seed-bed is fine and firm a surface roughness is no disadvantage. Maize following roots requires less preparatory cultivation.

Varieties

There are early maturing and late maturing groups of maize. Popular early maturing varieties are Early Butler and Ninety Day, while late maturing ones are Horsetooth Yellow and Hickory King. The late maturing varieties are heavier yielders of greenfeed and of these Hickory King is perhaps the most suitable.

Sowing

The usual method of sowing for greenfeed is to broadcast 80-90 lb. per acre on harrowed ground, followed by a discing or shallow ploughing, burying the seed to a depth of 2½ in. Where a grain drill is available, 60-70 lb. per acre are sown through every coulter, or every second coulter, while often 40 lb. per acre are sown in 28 in. ridges. Rolling is usually carried out after seeding to ensure a firm seed-bed. Crops sown in November-December are ready for feeding in March-April, it being essential to feed out maize before it becomes woody, as feeding value decreases after flowering. Should the material not be required for greenfeed at this stage it can readily be made into ensilage. Late maturing crops should be fed out before frosts occur, as frosting damages the foliage, which reduces the feeding value and often causes digestive troubles.

An economic and satisfactory increase in growth is likely to occur as the result of an application of 2-3 cwt. of superphosphate per acre, sown with the seed. The use of nitrogenous manures is also advisable on all but the most fertile soils. Blood and bone is suitable for this purpose.

Utilisation of Maize

Maize is best used for dairy cows, the crop being cut and fed out as required. It is used in dairy farming to lengthen the milking season by bridging the gap between grazing on grass alone, and feeding out hay, silage and roots. A good maize crop will yield up to 30 tons per acre, though the feeding value is not regarded as being very high.

Barley

Of the total area of 35,255 acres sown in barley, 6,008 acres were utilised for greenfeed alone. Possibly a small proportion of the remaining 29,247 acres was lightly grazed before closing up for grain, but this practice is not common, as barley for the purpose is usually spring sown. Almost 30 per cent. of the barley grown expressly for greenfeed is in the North Island, mainly in the dry Hawkes Bay and Wellington sheep farming districts, the remaining 70 per cent. being grown in the South Island, principally in Marlborough, Canterbury and North Otago.

Barley is useful for two main purposes, firstly, the provision of winter and early spring feed similar to that required of oats, and secondly, the rapid production in dry areas of a greenfeed catch crop during summer and early autumn. In comparison with oats it possesses the value of rapid initial growth and good recovery after grazing, but is a lower yielder, less frost resistant, and quicker to go off than oats.

Barley can be used as a catch crop filling the gap between the harvesting of a cereal crop in the autumn and the preparation of the field for roots or rape, while it is sometimes sown after a failure of rape and grass, or roots, to provide a quick bite of feed.

When sown in March-April for winter and spring feed, the cultivation is similar to that required for oats following after stubble, or as a catch crop in the eradication of twitch. When required for early autumn greenfeed, sowing after a failure with rape or roots, or on stubble ground immediately after this is cleared, the field is skim ploughed or disced, cultivated, harrowed, and drilled or broadcast.

Varieties

The two common varieties used are Black Skinless and Cape Barley. The former is quicker growing, more palatable, produces a greater bulk of feed, and recovers better after grazing than Cape Barley. This latter variety has the advantage of a longer growing period before shooting to seed, being intermediate in characteristics between Black Skinless barley and greenfeed oats. Cape Barley is most drought resistant, and consequently most popular in the South Island.

When required for late autumn and winter greenfeed, barley is usually drilled at the rate of about 2½ bushels per acre. When required to produce a quick bite of feed barley is usually drilled and sometimes sown broadcast at the rate of up to 3½ bushels per acre, followed by a light harrowing to cover the seed. The use of 1-2 cwt. of superphosphate can be recommended as a worthwhile practice.

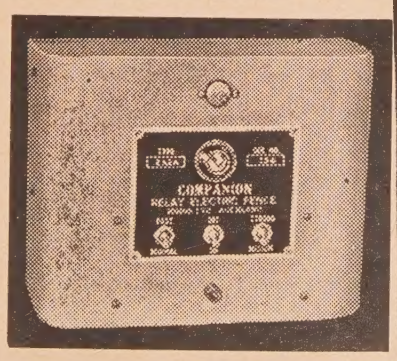
Utilisation of Barley

Greenfeed barley is used largely for sheep, but is used also on marginal dairying land for autumn grazing to maintain milk production, and in some of the more favoured districts to provide winter feed. For sheep it is largely a winter maintenance feed for ewes and hoggets, or a fattening feed for lambs during a dry autumn. Barley in an advanced stage of growth should not be grazed indiscriminately as digestive trouble may occur. The yield of greenfeed is somewhere in the vicinity of 6 tons per acre. Experience of farmers in Canterbury indicates that barley is fairly low in feeding value, unless it is grazed early and kept closely grazed, particularly in spring when it tends to run to hard, fibrous flowering stems.

Wheat

Of the total of 290,158 acres of wheat grown in 1942-43 in New Zealand, 80 per cent. was in the South Island, and 60 per cent. of this was in the Canterbury district. Of this area, 1,998 acres was grown for greenfeed. Possibly some of this latter acreage is sown for a grain crop in the autumn, but is grazed to such an extent in winter and early spring due to feed shortage that the chances of obtaining a satisfactory grain crop are remote, and the crop continues to be treated as greenfeed.

Hunters is perhaps the most suitable wheat for feeding off as it is usually autumn sown and is a strongly-rooted, robust plant. Tuscan or Cross 7 is



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also suitable but does not appear to stand such heavy grazing. No attempt should be made to utilise spring-sown varieties for greenfeed.

Feeding off is a feature of the fat lamb and wheat growing areas of Canterbury, where a proportion of the autumn sown wheat crop is fed off to a greater or lesser extent, depending on whether spring feed is scarce or not. Provided the feeding off is done by large mobs of sheep as quickly and evenly as possible, when the soil is in good, dry condition, the farming practice is quite sound provided the grazing is not too severe or too late in spring.

Ryecorn

In certain cases small areas of ryecorn, millet and sorghum are grown for greenfeed, although it is doubtful whether these crops possess any particular merits over and above the crops detailed previously.

Emerald rye is sown in the autumn and early spring at the rate of 2 bushels per acre to provide spring and summer feed, the seed-bed and manuring being similar to that required for barley or oats. When autumn sown it tends to be slow growing, no appreciable growth occurring till the advent of warm weather. The disadvantage of ryecorn is that it is slow to recover after grazing and that it is not very palatable or highly productive. The advantages are its drought resistance, and the fact that it can be grazed from spring to autumn with little fear of digestive disorders, and a fair seed crop can subsequently be obtained.

Millet

Japanese millet is usually sown in 7 in. rows at the rate of 15 lb. per acre in November-December for grazing in March-April. About 2 cwt of phosphate and perhaps a small application of nitrogen are advisable, the crop being similar to maize as regards place in rotation, climatic range, and cultivation. It is not a highly productive crop.

Sorghum

Sorghum is only rarely grown, but has been sown at the rate of 25 lb. per acre in 28 in. drills on areas subject to drought. Feeding off occurs only when in full flower, otherwise stock losses will occur.

Short Fallow

One aspect of greenfeed production which all of the crops detailed above have in common, and which is fundamental to their successful growth, is the necessity of a short fallow. Where practicable, this bare fallow of six weeks or so between the initial ploughing and the final surface cultivation before sowing is a worthwhile practice. Where this period of fallow is not observed the seed sown may strike well, but the crop may turn a yellow colour, with subsequent unsatisfactory growth.

Correct Utilisation

Incorrect utilisation of even the highest yielding greenfeed crop will considerably reduce the value of that yield. All animals require for healthy maintenance or growth is the presence of a certain amount of various substances in the daily ration. Cows or sheep that are in calf or lamb, or are milking, require an adequate supply of minerals for bone formation in the growing foetus or for the production of milk. Cereal greenfeeds are low in calcium and phosphate and do not supply the full requirements of these essential minerals. The result is that animals either draw on the mineral supply of their own bodies, or these minerals must be supplied by other means. Where animals are being grazed on greenfeed it must not be thought that supplements such as chaff, roots, grass, roughage, grass hay and cereal straws are providing all the essentials, as these foods too are mineral deficient. Such supplements as good clover hay, lucerne hay, a good mixed pasture, however, will help to provide the constituents not present in greenfeed, and will greatly enhance the value of the greenfeed.

It is considered by many nutrition experts that a large number of the troubles of pregnant ewes and cows are due to indiscriminate feeding of greenfeed or other bulky mineral-deficient feeds during the pregnancy period, and farming experience bears out this contention.

Where ewes or cows are not confined to greenfeed, but are given suitable supplements and adequate spells on a good mixed sward, the carrying capacity of the farm as a whole is increased, while stock losses and lambing troubles are decreased.

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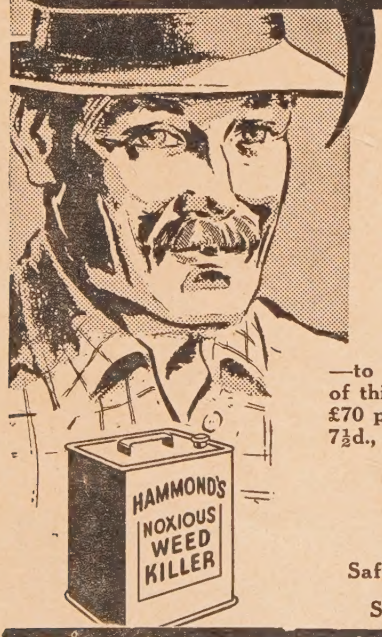

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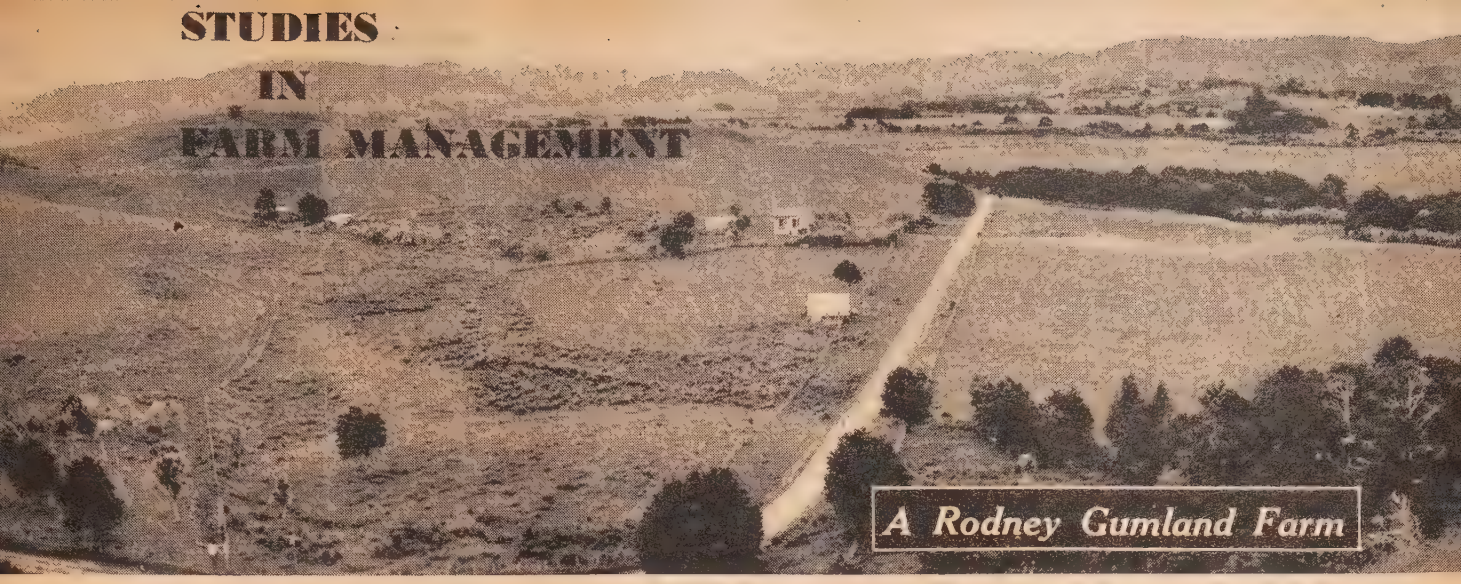
STUDIES IN FARM MANAGEMENT



LAND used for dairy farming varies considerably in natural fertility, and, although high fertility land is most suitable for dairying, many successful farms have been developed on poor scrub land. The following is an account of the development and management of a dairy farm at Matakana, Rodney County, which illustrates how a satisfactory dairy farm can be developed on poor gumland scrub lands.

— By —
P. S. SYME,
Instructor in Agriculture,
Warkworth.

RODNEY County, in general, is rugged and intersected by numerous valleys, with the land undulating from the bottoms to the foothills and then rising steeply to form the main hills which range from about 500 ft. to 1000 ft. in height. Small streams occur in the valleys, but there are no large rivers.

The chief geological formations are the Waitemata and the Onerahi beds, comprising a variety of limestone, sandstone and claystone formations. The soils for the most part consist of heavy brown or greyish clays of low natural fertility. On many of the limestone areas water is scarce in a dry season, and surface reservoirs are used to collect a supply for livestock. Compensating in some measure for the natural deficiency of the soils, the climate is mild and warm, with an ample and fairly well distributed annual rainfall of about 50 inches, and a mean day temperature of about 57 degrees.

There are no large towns and farming is the main industry throughout the county. Normally, dairying is practised on the easier country, and sheep-farming on the steeper areas, or where access is difficult. The most serious weed pests are gorse, blackberry, fern and rushes. Ragwort and Californian thistle are almost unknown.

With the warm, mild climate, paspalum grows superlatively well and forms the dominant component of most topdressed pasture land throughout the warmer months. In practice this species has proved the ideal complement to ryegrass and white clover in the pasture sward, and its drought-resisting habit, combined with its capacity for high production, offers scope for a considerable future expansion of the farming industry in the county.

CROPS AND LIVESTOCK—RODNEY COUNTY, 1941-42.

Unimproved land	94,704	acres
Annual crops	553	,,
Pasture	168,729	,,
Pasture cut for hay and silage	4,740	,,
Dairy cows in milk	25,461	
Total cattle	59,057	
Sheep shorn	132,062	
Total pigs	10,936	

Gumland Scrub Lands

Until comparatively recently it was generally believed that the natural fertility of a soil depended largely on the composition of the parent rock material from which the soil was derived. It is now known, however, that other factors are also involved, and that all soils tend to show a gradual change and to proceed from extreme youth (geologically) to mature old age, the speed of the process depending largely on three main factors: **the nature of the parent rocks, the type of vegetation** and **the annual rainfall.**

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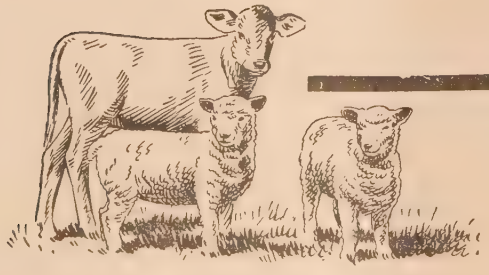


"It pays to specify K.P. Fertilisers."

As plant roots penetrate the soil they bring up food material which is ultimately deposited on the surface to form humus. Rain, on the other hand, tends to leach material from the surface and carry it down to the lower layers. If the surface humus layer is acid, as commonly happens when the soil is not rich in basic material, and the vegetation—like the kauri and manuka—is not very efficient in bringing basic material to the surface, extreme leaching may occur, so that humus and oxides of iron and alumina are carried down to the lower layers. Eventually, the soil structure may become greatly altered, and, in profile, may show a number of distinct layers. On the surface is the natural humus covering overlying a greyish leached layer with a crumbless single-grained structure. Beneath this lies a darker humus pan composed of material leached from above and resting on a reddish iron pan, usually containing a high proportion of iron and alumina. This extreme development—known as a mature podsol—is fairly common throughout the North. Such soils are of very low fertility and are particularly deficient in lime and phosphates. Drainage also is frequently bad owing to the pan formation.

Between youth and maturity there are a number of intermediate stages of podsol development, and soils may be classified accordingly as immature, semi-mature, sub-mature or mature podsols. Most of the soils in Rodney County would be classified in the first three groups.

Quite apart from its podsolising effect on the soils, the kauri tree has been indirectly responsible for considerable damage from a farming viewpoint. In the search for kauri gum much of the land has been repeatedly burned over and the humus content of the soil destroyed. Wide areas have also been dug over, and much of the better topsoil buried deep below the surface, while the numerous pits, often left unfilled, add to the cost and difficulty of reclamation for farming purposes.

Pasture Establishment

The natural covering of much of this class of land is now manuka scrub, blackberry or gorse. Grassing is commonly accomplished by clearing the land and working it up for a series of fodder crops before sowing down into permanent pasture in the autumn. Alternatively, the land may be left fallow and cultivated through the spring and summer with a view to securing a good clean seed-bed for an autumn sowing. The main requirements for a successful pasture are a long fallow period, thorough cultivation, the liberal use of lime and phosphate, and a well selected mixture of good quality seeds. The best results are usually obtained from an early sowing. In some areas grassing is effected by clearing, burning and surface sowing, but the type of pasture obtained in this manner is of a very low grade, and a long period of topdressing is required to build up a reasonably good sward.

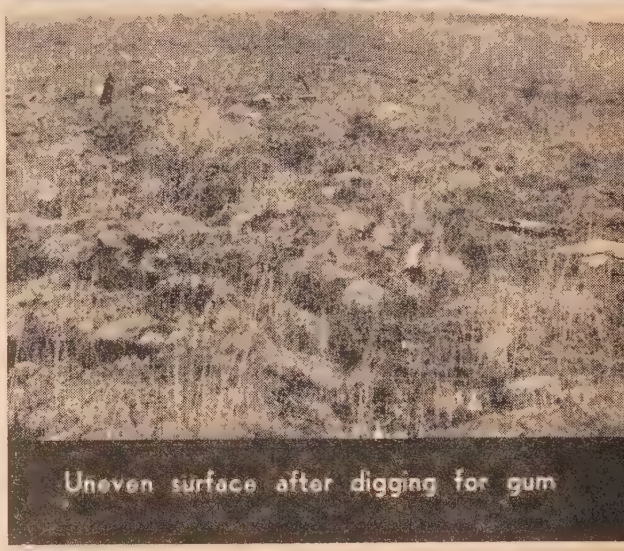
Despite the rugged topography and the somewhat low fertility of the land, modern methods of farming have shown that even very unpromising soils can be made to carry excellent pastures, and though dairy farming is still in its infancy, the annual production of butterfat bears witness to the tremendous potentialities of the northern gumlands.

DEVELOPING A GUMLAND FARM.

There is a traditional belief, still widely held, that to succeed in farming one should have been born and bred on the land. That such an upbringing may sometimes be an advantage is true, but the experience of Mr. H. L. Linton—and many another successful farmer—shows that lack of a farming environment in youth is no insuperable handicap, and need not deter recruits from other walks of life who propose to embark on a farming career.

When he took over a farm at Matakana in 1933, Mr. Linton had had no previous experience of farming and had very little capital. His main assets were a genuine liking for the land and a perfectly unbiased mind. Starting with few preconceived ideas or inherited prejudices, he had, at any rate, little to unlearn.

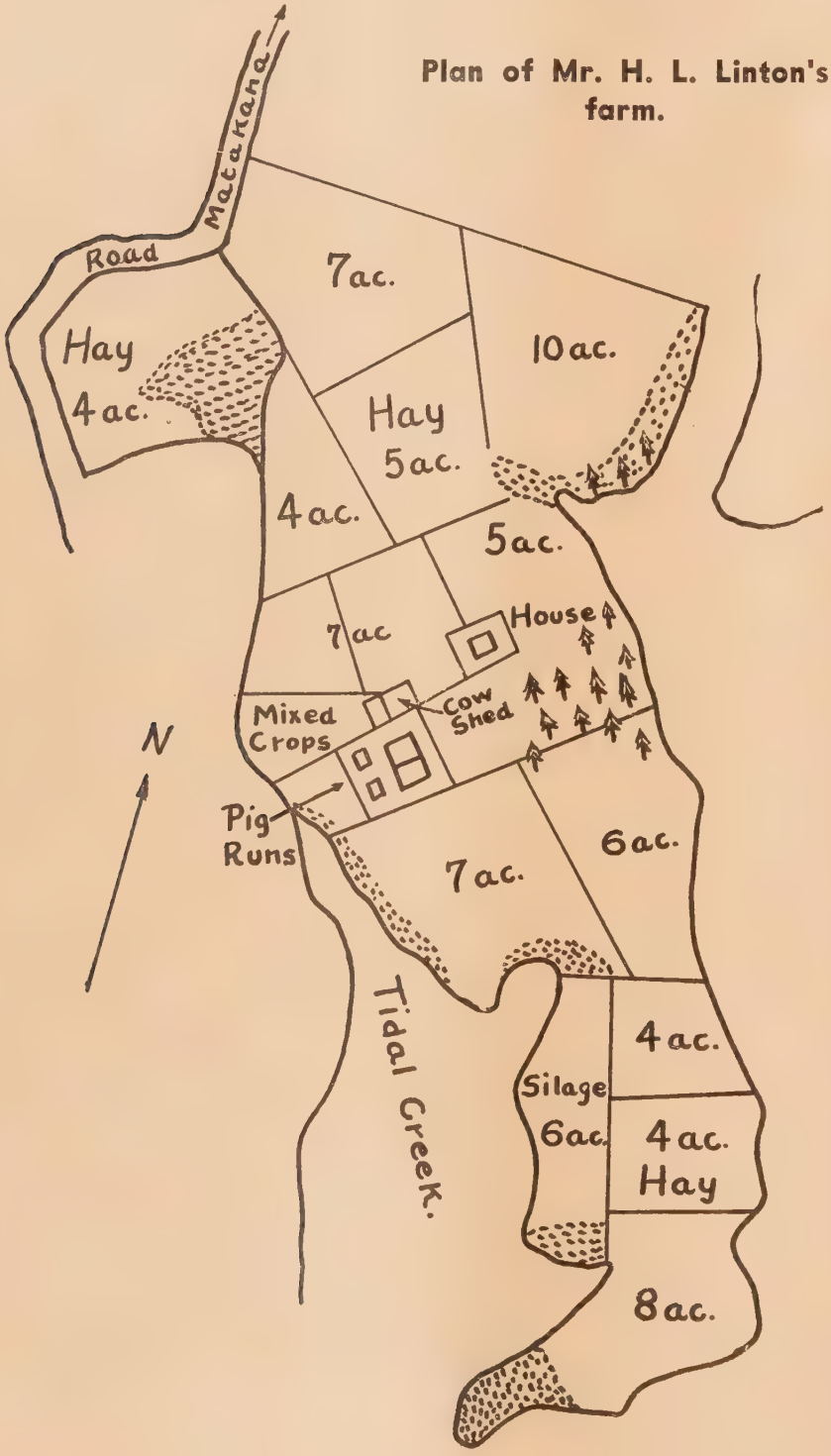
A Profile of a gumland soil



Uneven surface after digging for gum

Undeveloped gumland swept by fire

The farm comprised a total of 94 acres. Of this area 30 acres was in dense gorse and 14 acres in scrub. The balance of 50 acres consisted mainly of poor, gorse-infested danthonia pasture, containing only a few trace elements of the better grasses and clovers. During the first year the stock carried amounted to 23 half-starved cows of nondescript type, and their total production was only 3000 lb. of fat. Despite this very discouraging start, each successive year has shown a progressive improvement, so that the stock now carried amounts to 44 cows, 18 young replacements, 2 bulls, 2 horses and 4 breeding sows, while the production of butterfat has risen to 11,000 lb.



Butterfat Increase

Even under ideally favourable conditions an average yearly increase of 800 lb. of butterfat over a period of 10 years would be considered good. Accomplished in the face of serious difficulties due to lack of finance and on naturally poor land infested with gorse, the performance is indeed creditable, and a brief account of the methods adopted may prove of interest to other farmers.

The farm is typical of many Northland farms on the so-called gumlands. The land for the most part is undulating, rising from a small marine flat of about 20 acres to a maximum height of about 100 ft. and somewhat irregular in shape. The soil on the higher portions consists mainly of a heavy yellowish brown clay loam (semi-podsolised) overlying a heavy red clay. On the lower levels the soil merges into a whitish coloured clay loam (meadow soil) overlying a white papa subsoil, and is inclined to lie very wet in the winter months. Both soil types are of low natural fertility, lacking in humus, and with a high deficiency of lime and phosphates.

On taking over the farm, Mr. Linton was confronted with three main problems:

1. Eradication of gorse.
2. Improvement of farm pastures.
3. Improvement of the dairy herd.

While it was obvious that there was no immediate solution for any of these problems, it was equally evident that all three at any rate could be tackled immediately, and, as they were interrelated, progress in one direction would lead to an all-round improvement in the production of the farm. A beginning was made with the gorse.

Eradicating Gorse

Where the infestation in the pastures was not too thick, the plants were hand-grubbed. This operation was at first painfully slow, but each successive year the time needed became less and the job now occupies only about two days a year. Where the gorse was too dense for hand grubbing an area of about 6 acres was cleared and broken out each year in the winter and later sown down with a quick growing crop such as turnips, millet or maize, for summer feed. When fed off the land was again ploughed and sown in oats or soft turnips for winter feed. After this had been fed off the ground was then allowed to lie fallow, with occasional light cultivations to destroy any seedling gorse plants, through the spring and summer till the autumn, when it was sown down in permanent pasture with the following seeds mixture:—

Perennial ryegrass ..	20 lb.	
Italian ryegrass ...	6 ,,	
Paspalum	6 ,,	
Crested dogstail	3 ,,	(on dry areas)
Timothy	3 ,,	(on wet areas)
White clover	3 ,,	

Pasture Improvement

Appreciating the importance of adequate fertiliser on land which is naturally poor, Mr. Linton made it a practice to apply lime at 1 ton per acre with appropriate fertiliser during the cropping treatment, and to supplement this with a generous dressing of 3 cwt. super and 2 cwt. blood and bone per acre when sowing down the pasture. Though this may appear somewhat lavish, he is convinced that the resulting vigorous growth and early establishment of the clover element fully justified the cost entailed.

While each year new pasture was brought in with the plough, every effort was at the same time made to improve the existing pastures. These, as already mentioned, were desperately poor, and to effect any improvement by topdressing alone would have been both costly and slow. Accordingly, Mr. Linton adopted the practice of mixing selected grass and clover seeds with the fertiliser and applying this after the ground had been softened with the autumn rains and had been well harrowed. The results of surface sowing are much slower than those obtained by ploughing and re-sowing, and it is probable that the immediate greatly increased production obtained by the latter method is in the long run the more economic. Where a large area is involved, however, it is obvious that the speediest all-round improvement over the whole farm can best be obtained by a combination of both methods. Over a period of 10 years practically the whole of the farm has now been brought into high grade ryegrass-white clover-paspalum pastures, and a close examination shows that in spite of the difference in the methods adopted there is now very little difference indeed in the results obtained.

Dairy Herd Improvement

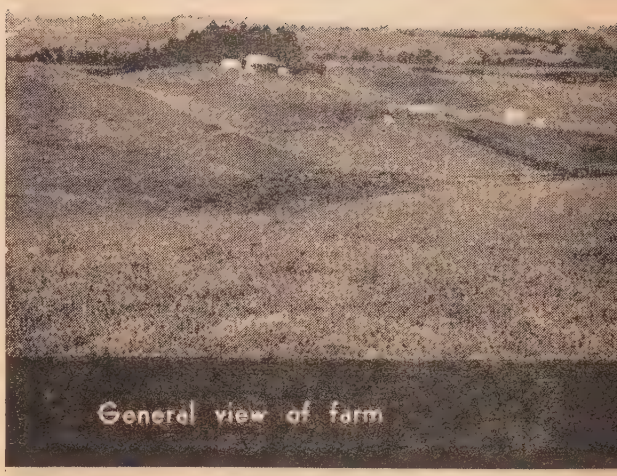
While appreciating the importance of improved feeding, Mr. Linton also realised the value of improved breeding in raising the production of his dairy herd. Both must go hand in hand. Normally, one recognised method of improving a herd is by purchasing a good bull and breeding from the best testing cows. Mr. Linton had no good cows, so he looked round for a farmer having a good herd, in which tested heifers compared favourably with reasonably high-testing dams. By purchasing young stock in this way he quickly acquired the nucleus of a useful herd. In the early stages he was concerned only with getting the cows in calf. Later, when he had got some worth-while foundation stock, he purchased a well-bred bull and commenced to breed from his own cows. By this time the work of pasture renovation was beginning to show up, and the combined improvement in the feeding and breeding soon resulted in greatly increased production over the farm.

Pig Production

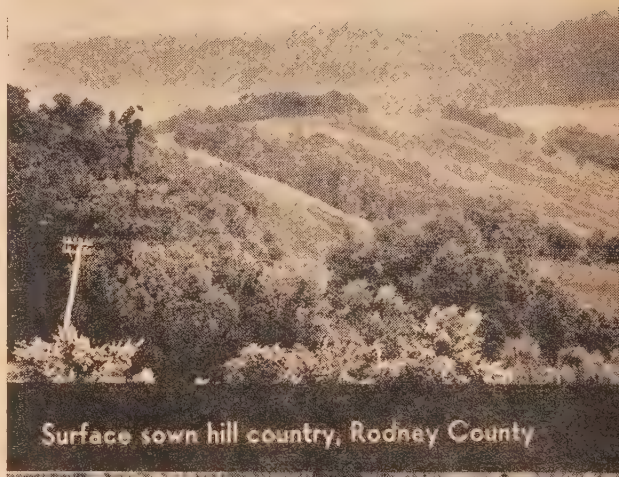
While every effort was being made to improve the yield of the dairy herd, attention was also paid to increasing the production from pigs. Four breeding sows are now kept—one to each 11 cows—and an endeavour is made to have the farrowing dates correspond to the milk flow. The first litters fall in May and are ready to wean when the cows come in about July. These go off as baconers. The second litters come in during November and go off as porkers, or are carried to baconers according to the milk available. Mr. Linton is a believer in the open-fronted "Preston" layout. The pigs sleep on dry and draught-proof concrete floors raised about a foot above ground level, and under this system no trouble has been experienced with disease. About 2 acres of crops, such as turnips, peas, and maize, is grown for pig feed each year, and about £20 is expended on meals. As the net return amounts to about £100 of clear profit each year, it will be agreed that the pigs pay well for their keep.

Topdressing

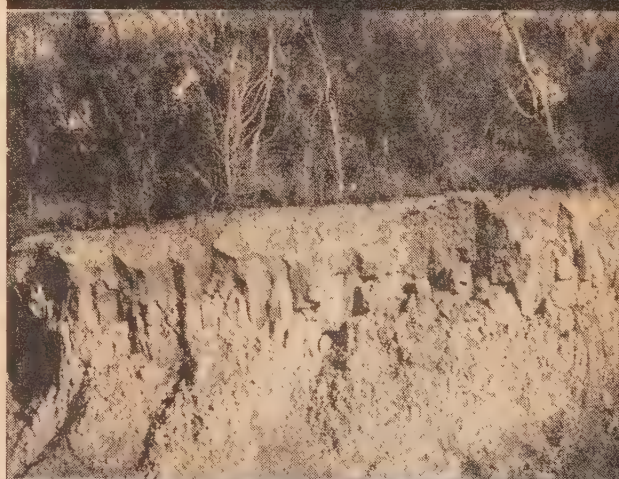
As more of the gorse-infested area was broken into grass, and the existing poor pastures were gradually improved by topdressing and surface sowing, the work of management gradually developed into a regular seasonal routine. Experience had shown the value of lime and phosphate, and accordingly lavish topdressing is considered of prime importance.



General view of farm



Surface sown hill country, Rodney County



Manuka covering on gumland

When fertiliser was freely available the pasture received 4 cwt. of basic slag one year, followed by 4 cwt. of super and 10 cwt. of lime the next year. As a rule, the whole of the fertiliser is applied in the early autumn, but occasionally ammoniated super has been used after an exceptionally wet winter to provide early feed on a few selected paddocks. Just as he appreciates the value of artificial fertiliser, Mr. Linton puts a high value on the natural manure, and for this reason the harrows are kept busy whenever they can do good work.

Pasture Management

As opportunity offered the farm has been increasingly subdivided and there are now 12 cow paddocks. A system of rotational grazing is practised, the aim being never to graze the same field for more than three days in succession. From the point of view of effective control, Mr. Linton would prefer still smaller paddocks and a shorter grazing period, and this is one of his ultimate objectives. Scientific investigation has shown that the optimum time to allow for recovery between successive grazings is about 3 weeks to 1 month, and this is the general basis of the rotation followed

As the growth becomes faster in the spring, selected fields are closed for mowing. About 14 acres of hay and 6 acres of silage are regularly made on the farm, as well as 6 acres of hay on an adjacent run-off of 17 acres. This, along with a few acres of supplementary crops, is used whenever the natural feed is short. With paspalum forming the dominant component of the pastures in the summer, serious trouble from drought is rather uncommon, nevertheless, the silage and roots form a very valuable reserve. In feeding out, an effort is made to build up fertility wherever it is most required, the motto being that, though feeding out may damage a good pasture, it inevitably improves a poor one.

Throughout the season good grass control is generally effected by the normal grazing and mowing for hay and silage. However, wherever the pasture tends to get out of hand, it is topped with the mower. This practice is adopted to prevent the formation of dry, unpalatable seed heads, and also to avoid smothering of the clover elements, the latter being a frequent danger with paspalum pastures.

By careful attention to the pasture management and by improved breeding of the herd, Mr. Linton is year by year raising the production of his farm, and this in spite of the shortage of fertiliser and other war-time difficulties. He has not reached his ultimate goal, but he is now well on the way. The results of a period of good farming are cumulative, and it will be admitted that the prospects of still further improvement in the future are indeed bright.

In the long run . . .

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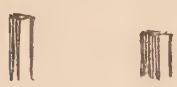

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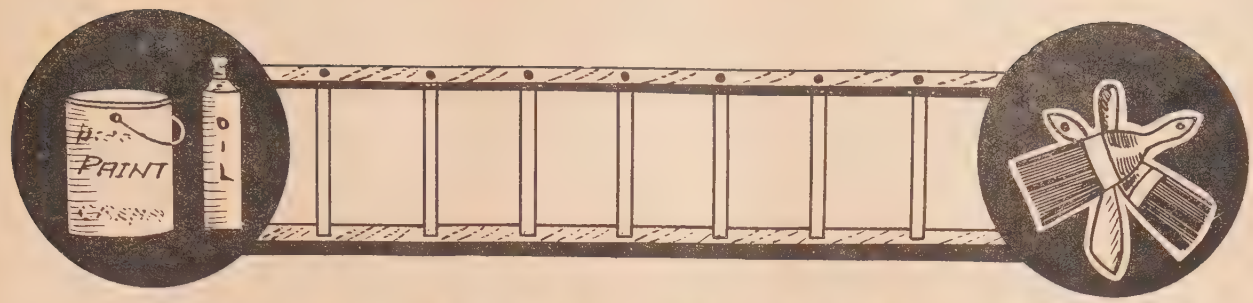


PAINTING

THE man who has painted his house, or other buildings, is now about. Many of us have heard of his skill. He is permitted to take front-rank among people with victories to their credit in self-help. Even the home-gardener with the largest vegetables accords him deference, for the painting of a house is no mean achievement for an amateur. It calls for all he can give it. Possibly the intending painter, to gain experience, will start on a less formidable object than a house, but, whatever course he does take, he will find the task easier after reading the following article. Therefore, let no man be dismayed.

— By —

W. F. C. VINE, A.I.A.A.,
Public Works Department,
Wellington.

THE existing shortage of materials, especially iron, steel and timber, forces us to give more care to that which we possess. Fortunately, paint is still obtainable, and as a preservative, it should be used, if anything, more freely than usual. Your house and other buildings should be painted at regular intervals, and all plant and machinery will last longer if regularly painted.

Of course, if you want a first-class job, you should engage an experienced painter, and see that he uses only first-class materials, but there are many jobs which you can do yourself, and, in these days, circumstances may compel you to tackle the painting of the house, too. It is not expected that reading this article will make you an expert painter, but a few hints will enable you to get the job done with a certain amount of satisfaction.

Best Materials

First and foremost, do not waste time with inferior materials; use only the best, and they will be the cheapest in the long run.

Good paint, good brushes, careful work and common sense will help to make a satisfactory job.

The main difficulty is to decide what is the best; the cost is not always a guide, nor are the claims of the makers. Once paint is mixed, only the man who mixed it can tell what is in it. The only common sense action therefore is to purchase a branded paint made by a manufacturer of known repute. He is jealous of his reputation, and will not put inferior stuff into his tins. Moreover, he generally provides instructions as to how his paint should be used, and if these instructions are faithfully carried out, failures should be few and far between.

Care of Brushes

Before starting painting it is highly desirable to have the correct types of brushes to carry out the work. For large flat surfaces, such as house walls and roofs, a four-inch flat brush is the best one to use. This type, however, is unsuitable for small areas like window sashes, and for this purpose a one-inch or a two-inch flat varnish brush will prove the best. A soft, flat brush for cleaning the surface before painting is essential.

Get good brushes and look after them. Never let the paint dry on the brush. A handy method is to bore a hole through the handle, and, when the brush is not in use, put a large nail or piece of wire through the hole so that the brush can hang in a jar without touching the bottom. Then put in some water until it stops just short of the binding. Next time the brush is wanted give it a few sharp flicks, and a few strokes on some waste wood, and it will be ready for use. When you have finished the job, clean the brush with turpentine, or kerosene, wash it in hot, soapy water, dry it thoroughly, and put it in a clean, dry place.

Preparing

Having got your paint, stir it well, because the pigment is very heavy and will settle on the bottom of the tin. Pour off some of the liquid into a clean tin, stir the remainder thoroughly until it is of even consistency and return the liquid gradually back, stirring all the while. Stir the paint while working, and repeat the stirring every time you start work.

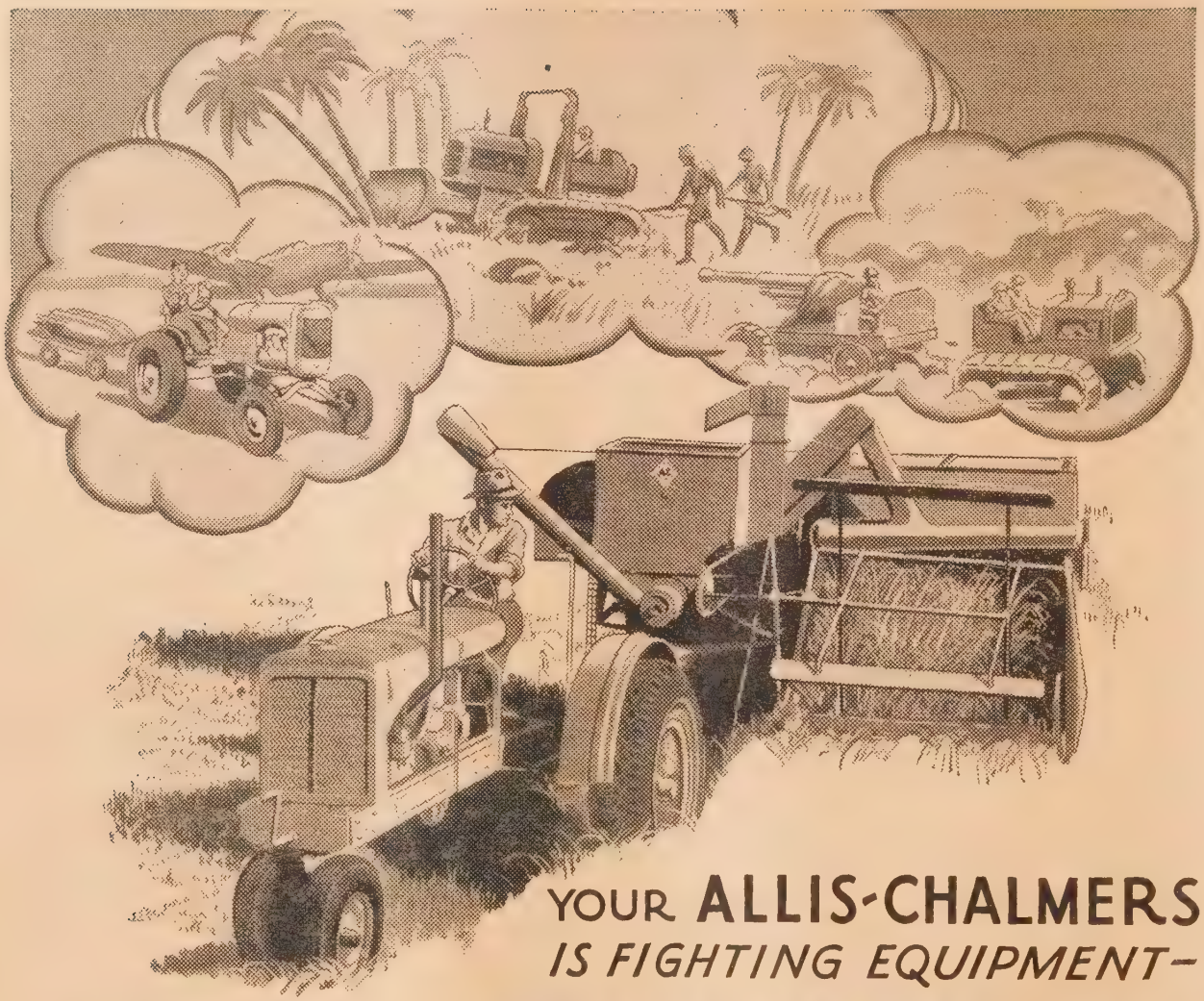
If you have any doubt about where to purchase your materials, write to any one of the following addresses, and you will be advised:

The Secretary, Department of Industries and Commerce, P.O. Box 3025, Wellington, C.1.

The District Officer, Department of Industries and Commerce, P.O. Box 1637, Auckland; P.O. Box 494, Christchurch; or P.O. Box 260, Dunedin.

For preference paint should always be bought "ready-mixed." This mixing is done by machinery, and the ingredients are in the right proportions. Instructions for use are generally printed on the tin.

Should you wish to mix your own paint, although that is not advised, you can get standard specifications from the N.Z. Standards Institute, P.O. Box 3049, Wellington, C.I. If it is priming you want ask for N.Z.S.S. E51, for under coat N.Z.S.S. E52, and for Finishing coats N.Z.S.S. E32. (Each will cost 1/- post free).



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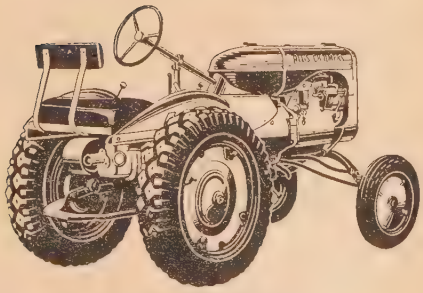

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ALLIS-CHALMERS

Estimating Quantity

An adequate supply of pots of convenient size is essential for efficient work. They must be carefully cleaned before use, the easiest method of cleaning old pots being to burn them out.

Before starting a job, make sure you have enough paint to finish it. A repeat order may be taken out of a different batch, and the colour, although appearing the same in the tin, may have a slightly different shade after it is applied.

Allow for one gallon of paint to each 800 square feet for each coat, but allow for more on absorbent surfaces such as sawn timber or plaster.

In addition, obtain a supply of raw linseed oil, boiled linseed oil and turpentine, also some putty.

In addition to the makers' instructions, several rules must be observed. See that all surfaces to be painted are free from dust, grease, or oil, and thoroughly dry. Never paint on "green" timber, or when the weather is damp. Do not apply the paint too thickly. Two thin coats are better than one thick one. They should be well brushed in, and finished off in the direction of the grain of the timber. Start from the top and work down, and do large surfaces first. Doors, windows and similar items require patience. When painting a door, do the panels first, then the inner rails and stiles, and finish with the top rails and the outer stiles.

On windows, paint the inner bars (astragals) first. The edges should be painted the same as the side towards which the door or window opens. Do not forget to paint the top, especially of windows. When painting windows, let the paint extend on to the glass about $\frac{1}{8}$ inch. After the paint is dry, clean spots off the glass with a razor-blade and cut the paint back to a straight line, but still overlapping glass about 1/16 inch.

Two Colours

When using two different colours, the second can be prevented from spreading on to the first by using a sheet of cardboard or iron as a mask. Of course, the first colour must be dry before the other is applied. If you want a neat job, remove door-handles and window catches (being careful not to lose the screws) and replace them when the paint is dry.

As soon as you knock off work hammer the lid of the tin down tightly, even if it is only morning-tea time. You may be interrupted, and paint will dry up in a tin if exposed to the air.

Painting Roofs

Different kinds of paints are used on iron roofs. Do not try to paint new galvanised iron; the paint will not stick. It is a good plan to wash the iron with clean water and let it stand in the air to dry before putting it in place. Paint the laps, that is the parts of both sheets which will be in contact, with bituminous paint before fastening the sheets in place. Leave the painting for about six months, and use a special roof paint. Roof paints are generally made with oxide of iron. If appearance does not matter use bituminous paint or even tar.

When painting old roofs, do not paint over rust. Use a wire brush, or something similar, and remove all loose scale and rust, although there is no need to bring the iron to a bright polish. If a roof is rusted through, the holes must be patched, preferably with iron, but if not too bad they can be repaired by the brushing on of a thick coat of bitumen emulsion, embedding hessian, canvas or sacking, and giving several more coats of bitumen emulsion over the patch. These remarks apply to spouting, downpipes and tanks (outside only) but do not use bitumen compounds if the water is wanted for drinking.

If you are modern, and have an asbestos-cement roof, do not waste time and paint. This kind of roof needs no preservative.

Never paint new cement. Cement should not be painted for about two years. Two coats of sulphate of zinc (3 to 4 lb. in a gallon of water) applied to new concrete will make the surface suitable for the application of ordinary paint.

Creosote

The use of creosote oil as a stain and preservative for the woodwork of houses and farm buildings is strongly recommended. Borer is not attracted by timber impregnated with creosote. The creosote can be applied in one or two coats in the same man-

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ner as ordinary paint. The oil is obtained ready for use. Creosote provides a reliable method of preserving timber where appearance is of secondary importance.

War on Rust

Implements and tools will last longer if prevented from rusting. See that they are clean before paint is applied. Remove rust with wire brush, steel-wool and emery cloth, remove grease and oil with kerosene, a solution of washing soda or even soap and water. The best primer is pure red lead mixed in linseed oil, and a second coat should consist of some form of iron-oxide in oil.

The makers supply special paints for metal work. Do not confine your painting to the parts that show. How many think of lifting the bonnet of their car or lorry, cleaning off all the accumulated mud and grease and giving everything a coat of paint? Do not paint up any electrical contacts.

For the third and finishing coats, ordinary paint can be used. Synthetic enamels give a nice appearance, but cost about twice as much as paint. Do not leave your implements unpainted for lack of special paint. Any paint is better than nothing.

When a machine is out of use for a while, bright parts can be painted with a mixture of tallow and white lead to keep off rust.

Use of Enamels

Enamels are paints containing substances that give a glossy finish. As most of the many varieties of enamels are transparent, an undercoat of ordinary paint of the same colour should be applied first. Enamel is not so easy to use as paint, but if the undercoat is sandpapered first with very fine sandpaper a better result is obtained.

A modern type of enamel known as "synthetic" enamel is now (or is normally) on the market. As it is much dearer, its use should be confined to such work as decorating a kitchen or renovating furniture. It is easy to use, but the makers' instructions should be faithfully followed. It will stand hot water, and is very useful for tabletops and sink-benches, but unless the surface is thoroughly cleaned before the painting, this enamel has a tendency to peel off.

Lacquers are so difficult to use satisfactorily that the only advice to the amateur is "Don't."

Distemper

Distemper is not only a disease in dogs but is a type of water-paint very useful in sprucing up interiors, as it is much cheaper than paint. Distemper is commonly used for renovating interior plaster walls and ceilings. The surface should be thoroughly cleaned before the distemper is applied, and a coat of plaster of paris and milk should also be applied if the plaster shows signs of damage. Two coats of distemper are generally required to pro-

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duce a satisfactory finish. A common defect of distemper is its liability to become chalky and rub off. This can be overcome by applying a coat of glue-size prior to the application of the distemper. When using the distemper the manufacturer's instructions should be closely followed, and a fair amount of skill is required to make a good job. Use a large brush, and work quickly, so that the working edge does not dry.

Whitewash

Whitewash has its own technique, and here are a few recipes:—

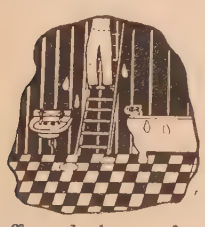
1. **56 lb. slaked lime (in powder with lumps screened out). Add hot water, and stir well. While still hot, add 3 lb. tallow or other grease, or 3 pints linseed oil. Stir in about 2 lb. salt, and thin down as required.**
2. **28 lb. roach lime (slaked), 3 lb. ground rice boiled to a thin paste, ½ lb. whiting, 1 lb. glue, 3 lb. of salt (or use sea-water).**
3. **Equal parts of buttermilk and water, mixed to the usual consistency with fresh well-slaked lime. Apply while hot.**

Varnish can be obtained either glossy or dull, and should not be applied in a dusty atmosphere. Use a soft brush, and after use, clean brush with methylated spirits and let dry. Do not put varnish brushes in water as you do paint brushes.

Stain can be obtained in a powdered form for mixing with water, or it can be obtained in spirit or oil. Spirit stain dries quickly, but oil stain is easier to use. In any case, better results are obtained by thinning the stain and giving two, three or more coats, using sandpaper between each coat to take off irregularities.

Tar is very useful if care is taken in using it.

Mind the Splashes



It is impossible to paint without a certain amount of splashing, and it pays to cover floors and furniture before painting inside. Always have a few dusters handy, and wipe off splashes of paint immediately. When painting ceilings and other overhead work, cut a disc of tin or cardboard and fasten round the handle of the brush near bristles to stop paint running down the sleeves.

A word of caution about oily rags: Do not leave them lying about inside, as fires have been caused by spontaneous combustion. If you must keep oily rags put them in a tin in a place where no harm can be done if they do burst into flame.

An easy way to clean the hands is to take about a teaspoonful of neat disinfectant of the carbolic type and rub it over the hands thoroughly, afterwards washing off in plain water and soap.

Colour Schemes

Sometimes it is not possible to get the colour you want, but paints can be mixed as required and a little experimenting is worth while. In general, add darker colours to the lighter, a little at a time.

Having obtained a suitable colour, mix enough to finish the job, as it is practically impossible to repeat the exact mixture.

When choosing colours, remember that paint on a wall looks different from paint in a tin. Choose softer colours for large surfaces and keep bright colours to small areas. If you like contrasting colours, let only one be bright and the others softer, keeping the bright colour the smaller quantity. Differing shades of the same colour are often more effective than contrasting colours. Remember that walls, ceilings, doors and windows are only backgrounds to you and your family and should not "shriek" at you.

Study the setting of your house. If you have a background of trees and shrubs in the garden, the house can be all white with just a touch of colour in the sashes and the doors. The darker shades of cream, together with shades of buff, are good colours to keep their appearance.

Interior Work

For interior work, consider the aspect of the room, as well as its purpose. Blue is a cold colour, green is a cool colour and both are suitable for rooms which get lots of sun. On the contrary, yellow and red are warm colours, and a room which gets little or no sun can be brightened up with a yellow tone, using touches of orange, even to red, to give extra kick. Grey is a very useful shade, while black, used sparingly, gives adjacent colours more brilliance.

For colour schemes, study nature in the garden or the fields, the dawn and the sunset; there you find no lack of inspiration.

Pig Production

THE basis of success in pig production is management. Essential information that will assist farmers towards the adoption of successful management with the ultimate result of better pigs is available in the Department's **free** bulletin, "Modern Methods of Pig Production." Copies can be obtained from the Department's offices, Wellington, Auckland, Christchurch, Dunedin and Invercargill.

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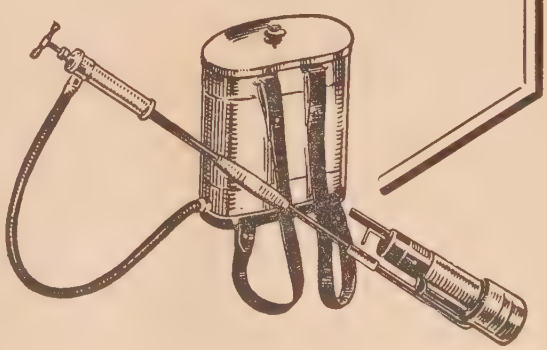

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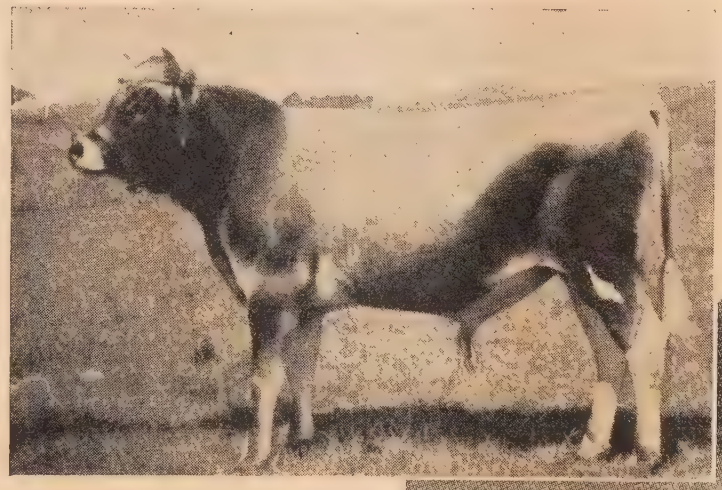

(Left)—The sterling young bull, Illawarra Joker, which was first and champion in its class at the Paeroa 1943 Bull Fair, and also first in strong competition at the subsequent Waikato Show. The Illawarra Stud (Mrs. R. Irvine), are fed with "WONDER" from the calf stage.

(Right)—Portion of the well-known Tamaki Jersey Herd, Otahuhu (Mr. C. J. Lovegrove). Tamaki stock is well-known for both stamina and performance, and has produced many outstanding animals. Mr. Lovegrove is also a big and consistent user of "WONDER."

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Wild Pig Poisoning

A Review of the Campaign in the Kaitieke County

THE King Country has long been noted for large numbers of wild pigs and of all its counties the Kaitieke is probably one of the most affected.

In dealing with the pest in the past, the settlers have had the assistance of odd settlements of Maoris who regarded the wild pig as a valuable source of food, and by the pig hunting of enthusiastic sportsmen. Under such circumstances the pest was, to a greater or lesser extent, kept in check, but of recent years such assistance has greatly decreased. In addition, the shortage of man-power, rifles, ammunition, and petrol due to war conditions, has allowed the pigs to increase to such an extent that the farmers cannot adequately deal with them. In fact, instances are recorded in some localities where lambing percentages were almost nil, and in one case the percentage dropped, through the depredation of the wild pig, from 66 per cent. last year to 20 per cent. this year. (This property did not come within the area of the poisoning campaign.)

— By —

G. R. MACKINTOSH,
Inspector of Stock, Taumarunui.

The Kaitieke County Council realised that the losses due to the wild pig menace called for concerted and comprehensive measures, and instituted a campaign of destruction which commenced in July, 1943.

Progress Reports

The County Engineer, Mr. W. Stanton, arranged and supervised the whole campaign, and in September, 1943, reported to the council as follows:—

"I am unable to furnish as full a report at present as I would have liked to, owing to insufficient information as to results being available. I hope to receive fuller information later and will make a final report when this comes to hand.

"Six men were engaged and worked on the scheme for an average of 11½ days each. Carcases of sheep, cattle, and horses were placed in suitable localities in pig infested country and poisoned by means of injections of phosphorus in a carbon-bisulphide solution. The number of carcases put out as bait for the pigs is as follows: Sheep, 103; cattle, 18; horses, 7.

"These carcases were distributed over a wide area, taking in 35 properties. Up to the present reports from only 17 properties are to hand, and these show that results vary. Of the 17 properties referred to, the carcases on 13 of them have been wholly or partly consumed, and on the remaining four they are as yet untouched. Though the success of the scheme cannot be judged by the number of dead pigs found, as generally they will roam into the bush or dense scrub to die and are not discovered, nevertheless the number of dead pigs found on the 17 properties on which I have had reports amount to about 70. This is, of course, only a preliminary count, and we expect to find many more.

"Reports so far to hand indicate a decided decrease in the number of pigs about, and I give the following extracts from individual property reports as evidence of this: 'Seen no pigs for three weeks.' 'Pigs seem to have gone away.' 'Big reduction.' 'Seen no pigs on grass.' 'No fresh rooting.' 'Never so free at lambing.' All concerned are of the opinion that the scheme is a good one, but it is generally considered that it should have been commenced two months earlier in the year."

In November, 1943, Mr. Stanton furnished the following report:—

"Sufficient time has now elapsed to enable the results of the recent scheme for the destruction of wild pigs to be assessed and summed up. Results have been better than were indicated in my preliminary report. Baits were laid on 35 properties, and on only five of these was no bait at all taken. Strange to say, on several of the properties where no bait was taken pigs were numerous, and were known to take dead unpoisoned carcases in the vicinity of the bait, but would not touch the bait. I have endeavoured to discover some reason for this, but am unable to account for it. On the other hand, bait was immediately taken on other properties where pigs

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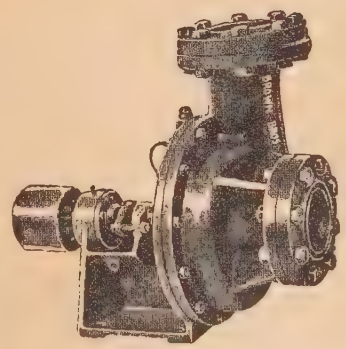

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were not nearly so numerous. Some carcases remained untouched for two months and were then consumed, and dead pigs were discovered in the vicinity. It is impossible to say how many pigs were actually killed by the poison. Over 100 have been counted, and it is reasonable to assume that this number could be multiplied several times. The owner of one of the worst infested properties reports excellent results. To use his own words: 'The whole place is at present stinking of dead pigs.'

"The most satisfactory feature of the whole scheme is that on properties where pigs were numerous, a marked decrease in the pigs about after the poison was laid was noticed. One man whose property adjoins badly infested country informed me that previous to his neighbour commencing to poison two or three years ago he could shoot on his own property easily 150 in a season. Now he rarely sees one. Another important fact has been established. Pigs will eat pigs. Many pig carcases have been wholly or partly eaten by other pigs. The importance of this fact will be obvious. If pigs poisoned by the bait laid are eaten by other pigs it is reasonable to assume that they will be poisoned by consuming the entrails of the poisoned pig. Just how far this process of extermination is carried I am not prepared to say, but I think it is reasonable to claim that for every pig poisoned by the bait at least one other pig will die.

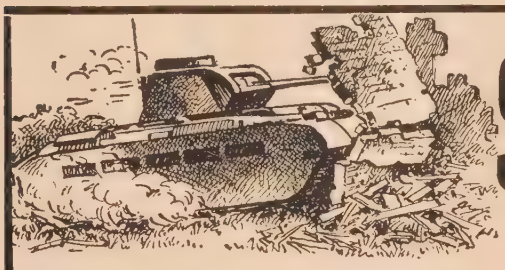
"All farmers who have seen what good results have been achieved on their own properties, and those of their neighbours, are enthusiastic and anxious to see the scheme continued till the menace has been removed, but all are agreed that the work should be carried out during May, and not later than June. The opinion is that still better results would have been achieved if the scheme had started earlier this year. The work could be carried out much more economically and expeditiously if farmers would arrange to have the necessary carcases on the site in readiness for the men who would be doing the poisoning. Much time has been taken up by the men this year in hunting and driving or packing the bait to suitable sites."

Types of Poison

During this campaign phosphorised pollard, as used for rabbit poisoning, was placed in the carcases of some sheep and cattle bait, and it was found that these baits were consumed to almost the same extent as the carcases that were injected with the more potent solution of phosphorus and carbon-bisulphide. The use of reasonably fresh phosphorised pollard in carcase baits is obviously much safer for general farm use, and is effective in killing of pigs which consume the bait it is in.

Results

There appears to be little doubt that the poison is transmitted from the carcases of pigs which have been poisoned to other pigs which have found and devoured these poisoned pigs. The following experiences will probably be of interest from this point of view. Mr. N. Dempsey, of Lower Reteruke, in the spring of 1942, injected phosphorus poison into a ram carcase and left it on a gully track; three weeks later he noticed that a portion of the carcase had been con-



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sumed, and 300 yards further up the gully he found a large boar squealing on its back in some scrub, obviously dying of poison. His son shot it and turned it over on the track. About a month later this boar was found to have been partly consumed, and approximately half a mile away a second boar was found dead in a very fresh state. The original ram carcase bait was only touched the once, and the last pig found was thoroughly examined in arriving at the diagnosis of poisoning.

The other case occurred last spring. A number of poisoned pigs were found around the skeleton remains of a sheep carcase bait, and of these a half-grown boar was seen to have died only 50 yards away. On a subsequent visit a month later three small suckers were nibbling around the remains of this young boar, which had been almost totally consumed; a brief search revealed a large sow—the mother of the suckers seen—dead in some fern not 30 yards away. Just over a fortnight elapsed, and it was found that the head and neck of this sow had been eaten and another sow was found dead within 100 yards. This last sow had died so recently and was in such a fresh state that a post-mortem revealed traces of smoky phosphorus in the stomach contents. Mr. R. C. Hamilton, of Pukeatua Road, also informed me that pigs were dying on his farm months after all baits had been consumed.

These experiences indicate that the poison is transmitted to pigs which have devoured other pigs which had previously died of the poison. The value of this factor is obvious, but it is dependent on how long the carcases remain whole and so hold the poison. Horse and cattle carcases remain longer than that of the sheep, but the latter carcases are usually more readily taken because putrefaction takes place more quickly. It is worth noting that since the final report of the County Engineer, appearing above, carcases have since been consumed on two farms which had reported no results whatever; also the case of a pony carcase which remained ten months in some bush before it was eaten by pigs.

It is not easy to explain why the baits were not taken on a few farms where wild pigs were numerous. Prior to the poisoning experiments, I had known of sheep carcases being untouched on a farm where pigs had devoured other similar carcases, but such is very unusual. It may be that the vicinities of the baits were visited by men or dogs, and that the scent of their tracks disturbed the pigs, or possibly that too much poison was used which so delayed putrefaction that the wild pig was unattracted to the bait. We may find out more on this aspect of poisoning just as it was noted this year that the opening of untouched baits, to assist putrefaction, was advisable. An experiment last winter with meat balls containing phosphorus was not encouraging.

The destruction of the wild pig pest in as thorough and efficient a manner as is possible means the saving of large areas of pasture, the saving of hundreds or possibly thousands of lambs which would have been lost, and the elimination of losses in the form of wasted labour, dogs lost, and broken fences, and it may also protect some land owners from the necessity of changing from breeding ewes to wethers. It should not be forgotten that these areas provide farmers on the better class land with the breeding ewes they most desire to breed fat lambs, and that the wild pig menace, if inadequately dealt with, could detrimentally affect the supply of the efficient four- or five-year-old ewes to the more distant farmers who wish to replace their elder, less efficient ones. Again, it is possible that neglect of the high country ewe supply may tend to convert some fattening land to breeding ewe production.

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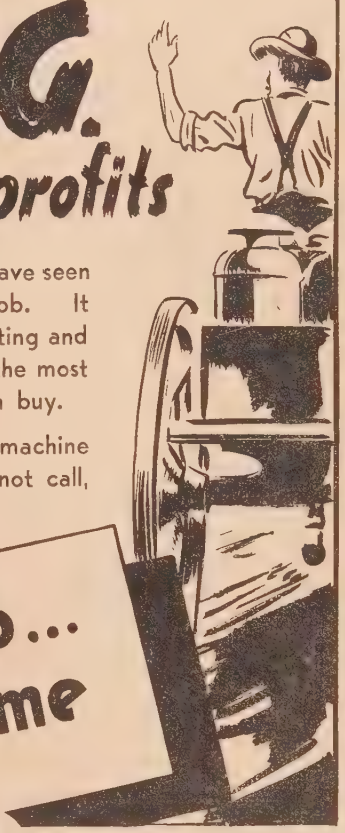

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Grade.	Litter Weight.	
	At 3 Weeks.	At 8 Weeks.
1	120 lb.	360 lb.
2	100 lb.	300 lb.
3	90 lb.	270 lb.
4	80 lb.	240 lb.
5	70 lb.	210 lb.

THE following table sets out the performance of each breed as an average for all litters recorded during the period under review:—

Averages.

Breed.	No. of Litters Recorded	No. of Pigs per Litter.		Litter Weight at		Weight per Piglet.	
		Born.	Weaned.	3 weeks. (lb.)	8 weeks. (lb.)	3 weeks. (lb.)	8 weeks. (lb.)
Berkshire ..	33	10.0	8.5	106	331.9	13.32	38.43
Large Black ..	2	10.5	7.5	98.5	267.5	13.13	35.67
Large White ..	9	11.3	9.2	136.4	415.2	14.80	45.02
Tamworth ..	36	8.8	7.0	92.9	267.9	12.49	39.12

THE following lists give the names and addresses of the owners, the herd book numbers of the boars and sows, together with the adjusted litter weights at three and eight weeks, the grade of the litter, and the number of pigs born and weaned.

Tamworths.

Owner's Name and Address.	Herd Book No. of—		Litter Weight (lb.)		No. of Pigs		
	Sire.	Dam.	3 weeks. (lb.)	8 weeks. (lb.)	Born	Weaned	Grade of Litter
Dovedale Pig Club, c/o W. G. Kenyon, Thorpe, Nelson	11413	11531	155	523	14	13	1
ditto	12797	11531	122	359	12	12	2
Mahia Pig Club, c/o P. H. McKay, P.O., Opoutama, H.B.	12779	12575	85	271	7	7	4
Pohangina Pig Club, c/o T. J. Spelman, R.D., Ashhurst	11206	10142	69	227	11	5	—
ditto	13181	13166	43	160	4	4	—
ditto	13181	13166	171	234	8	5	5
Mahakipawa Pig Club, c/o. W. D. Bryant, Mahakipawa	11652	12689	53	242	8	6	—
Kaikoura Pig Club, c/o S. Sharpe, Kaikoura ..	10502	11075	82	280	10	7	4
Te Arai Pig Club, c/o H. F. Ross, Manutuke ..	9137	9911	50	159	4	4	—
ditto	12779	12697	101	285	8	7	3
ditto	12834	13109	57	180	7	5	—
ditto	12834	13109	18	62	13	2	—
Tadmor Pig Club, c/o C. P. Palmer, Tapawera ..	12716	12033	78	249	5	5	5
Murchison Pig Club, c/o E. M. Brown, Murchison ..	12714	10317	55	150	6	5	—
ditto	12714	13083	98	301	10	9	3
K. R. Munro, P.O. Box 3, Pokeno	15913	11292	103	264	8	6	4
Wakefield Pig Club, c/o S. G. Higgins, R.M.D., Wakefield	13159	12280	104	342	11	9	2
Riwaka Pig Club, c/o O. C. Wilkinson, Motueka ..	11384	10295	84	250	8	8	4
Coldstream Pig Club, c/o D. E. Smith, Waikuku R.D., Rangiora	10565	11877	122	321	11	8	2
ditto	12392	11877	164	450	12	12	1
ditto	10342	11877	95	287	12	7	3
ditto	10342	11877	69	193	9	5	—
Karamea Pig Club, c/o T. H. Jennings, R.M.D., Karamea	10338	10122	57	99	8	4	—
W. R. Christie, "Blair Athol," R.D., Balclutha ..	12278	11861	144	454	11	10	1
Rangiora High School (J. A. Ivory, Sec.), Rangiora ..	11750	11968	92	285	13	6	3
ditto	10342	12937	94	258	8	6	4
ditto	10342	12937	122	374	12	11	1
ditto	13503	13462	71	229	8	6	5
ditto	10342	12937	46	144	4	4	—
ditto	10342	13462	80	266	6	6	4
Hari Hari Pig Club, c/o G. Manship, Hari Hari ..	10316	10728	119	185	6	6	—
ditto	10316	10728	124	336	10	8	2
ditto	10316	12254	100	221	8	8	5
ditto	10316	12254	108	409	9	9	2
ditto	10316	11634	96	257	8	8	4
G. Manship, Hari Hari	10316	12918	113	339	9	8	2

Large Black.

J. H. P. Liggins, Tokomaru	2872	3081	120	329	8	7	2
Te Wairoa Pig Club, c/o K. M. Martin, Box 13, Ngongotaha	2271	3482	77	206	13	8	—

Large Whites.

Norsewood Pig Club, c/o S. L. Merrick, R.D., Norsewood	5092	5538	94	302	10	7	3
A. T. Richards, Barrytown, Greymouth	5155	5665	119	372	10	10	2
ditto	5671	5665	144	304	11	9	2
P. Wafer, Barrytown, Greymouth	4558	5410	165	552	12	12	1
ditto	4558	5410	165	459	15	10	1
ditto	4558	5410	133	596	9	9	1
ditto	5671	5410	133	419	12	9	1
N. Myers, Mauriceville East	5439	5825	115	375	11	8	2
H. R. B. Burns, "Norfolk Lea," Tapanui	5744	5397	160	358	12	9	1

Berkshires.

Owner's Name and Address.	Herd Book No. of—		Litter Weight (lb.)		No. of Pigs.		
	Sire.	Dam.	3 weeks. (lb.)	8 weeks. (lb.)	Born	Weaned	Grade of Litter
T. D. Rowlands, Ruthen R.M.D., Kaiapoi	16715	15796	127	471	10	10	1
ditto	18345	18346	57	270	9	8	—
O. C. Ellerm, Sanson R.D., Palmerston North	14949	16091	121	346	9	9	2
ditto	14949	15734	137	332	10	9	2
L. R. Rowan, Milson's Line, Palmerston North	11317	14801	172	428	16	8	1
W. J. E. Jenkins, Box 28, Taka	18089	14449	69	219	11	7	—
Pukekohe East Pig Club, c/o T. E. Morgan, Pukekohe East	13577	15558	81	282	9	8	4
J. Bain and Sons, Seddonville	16206	15758	120	396	13	10	1
N. W. Stokes, R.M.D., Kaikoura	15290	15813	113	343	10	9	2
Rotomanu Pig Club, c/o H. E. Hodgkinson, Rotomanu, Westland	18056	12798	137	425	11	10	1
ditto	19349	12798	78	175	7	6	5
ditto	18295	12798	97	357	14	8	3
ditto	18295	12798	90	264	8	6	4
Patetonga Pig Club, c/o R. McCullough, Patetonga R.D.	16238	14851	121	344	10	8	2
Methven Pig Club, c/o A. G. Rawlinson, "Enfield," Methven	18451	15887	85	289	9	8	4
ditto	18451	15887	85	272	10	8	4
ditto	18451	15887	98	258	13	7	4
ditto	12712	10816	134	374	11	11	1
Rockville Pig Club, c/o W. D. Lash, Rockville, Nelson	15100	12805	95	317	10	8	3
E. C. Brown, Mt. Fyffe, R.M.D., Kaikoura	16337	16851	111	450	9	9	2
Parkvale Pig Club, c/o L. Smith, Parkvale, Carterton	16375	14880	140	538	14	13	2
ditto	16375	14880	68	198	11	8	—
Manutuke Pig Club, c/o R. K. Hepburne, Manutuke, Gisborne	16310	13606	51	273	7	7	—
ditto	16310	15329	56	134	4	4	—
Haumoana Pig Club, c/o H. J. McKeesick, Haumoana, R.D., Napier	16631	16163	121	363	10	10	1
ditto	18101	18881	88	320	9	9	4
Horsham Downs Pig Club, c/o C. G. Haultain, Horsham Downs	16895	18018	110	360	11	11	2
Pohangina Pig Club, c/o T. J. Spelman, R.M.D., Ashhurst	14740	14589	78	316	13	7	5
Mrs. H. M. Jackson, Ngaere	15737	19031	110	314	9	8	2
ditto	15737	18769	85	260	8	7	4
ditto	19029	19030	128	307	9	8	2
H. E. Hodgkinson, Rotomanu, Westland	18295	18278	192	455	10	10	1
ditto	18295	18278	143	504	15	11	1

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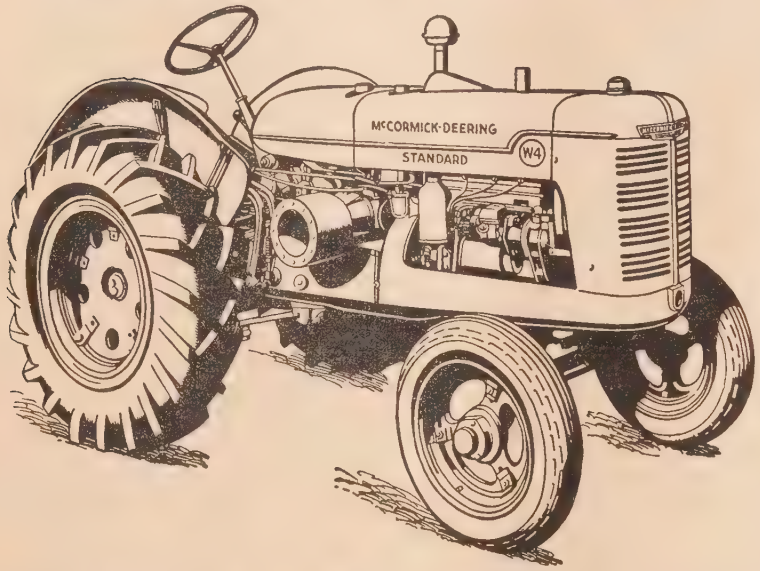

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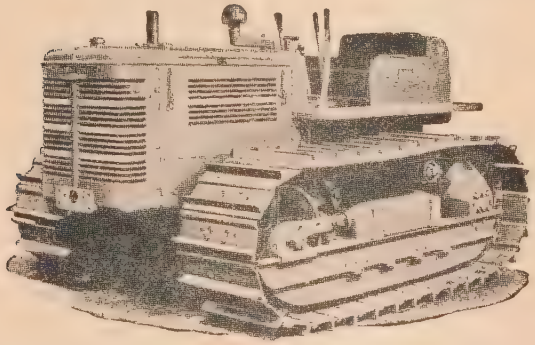

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ALL MODELS ARRIVING SHORTLY ON PNEUMATIC TYRES

PORTABLE MILK ELEVATOR

Suitable for Use by Herd Testing Officers

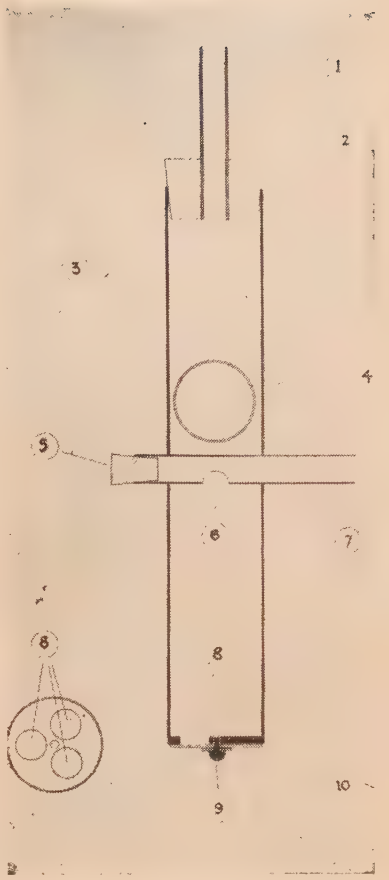
— By —
W. G. WHITTLESTON,
Animal Research Station,
Wallaceville

NOW that young women are undertaking the work of herd testing the need has arisen for some cheap, simple means for lifting milk from a can at floor level to the vat on the milking machine. When heavy milking cows are being tested a very considerable amount of work is required to lift the buckets containing the milk to the level of a vat which may be seven feet or even more above the floor. There are commercial elevators available but all known to the writer are too expensive for distribution throughout the Herd Improvement Associations.

The elevator described was designed to be cheap, easily cleaned and reliable. Further, it is essential that the elevator permit no milk to pass back into the milk pipe of the machine. The simplest possible way to lift milk on some milking machines is to plug a tube into the end of the milk pipe projecting from the releaser. This method is not possible with some machines, and, in other cases, it can be shown that under certain unusual conditions milk may pass into the milk pipe and from there to a bucket, thus possibly upsetting a test. Such conditions arise when milk has passed into the milk pipe and a set of cups falls off in one or more bails. The vacuum in the remaining buckets then becomes higher than that in the milk pipe. Air flows from the latter to the former and may carry milk with it. This point was considered when designing the elevator described and precautions taken to prevent any milk passing over. Further, as the elevator is operated by the releaser pulsator milk can pass into the buckets only on a single pipe machine. However, it is exceedingly unlikely that any such trouble will be experienced.

The Elevator

As shown in the illustration the body (3) is made from a piece of 2in. milk tubing 12in. long, nickelled outside and tinned inside. Into the middle of this piece of tube a short length of 9/16 in. milking machine dropper tubing (7) is sweated so that about 2in. projects on one side, while a shorter length (about ½ in.) projects on the other. A hole at least ½ in. in diameter (6) is drilled in this tube, as shown, so that the milk stream is directed downwards. The shorter end is closed with a rubber bung (5) while the longer end connects via a short piece of rubber tubing to a tap, which in turn connects to a length of rubber tubing. Alternatively, a tap may be sweated directly on to the intake tube (7). Milk escapes from the elevator via the three ⅝ in. holes (8). These holes are covered by a thin rubber disc (10) held in position by a short bolt and washer (9), this arrangement acting as the outlet valve. The valve may be adjusted by tightening or loosening the bolt (9). No intake valve is used. A rubber ball float is seen at (4). This, while not essential, is a check on the possibility of the elevator overflowing. A large perforated rubber bung (2) at the top of the device is fitted with a piece of stout walled glass tube (1) by means of which connection is made to the releaser pulsator. This glass tube enables the user to see whether any milk froth is being carried over. The tap on the inlet allows the rate of flow to be adjusted so that there is no tendency for frothing.



The elevator unit is held on the side of the milk vat by a G-clamp. When it is inconvenient to strain the milk through the normal strainer in use with the milking machine a shallow cylindrical strainer is fitted round the bottom of the elevator. It has been found convenient to fit the lower end of the rubber milk intake tube with a suitable length of metal dropper tubing perforated at the end immersed in the milk.

The elevator described has been tested under field conditions for a period of six months, including the "flush" of the season. The capacity has been found adequate for all machines with which it has been used. The rubber disc valve has been found to work satisfactorily and to require no replacement. To keep it in the best working order it is good practice to reverse it from time to time. Although the elevator under test was not fitted with a rubber ball valve no trouble was experienced with milk overflowing. One machine was encountered on which the elevator would only work slowly without allowing froth to pass over. This is due to an incorrect releaser pulsator ratio. If the release phase is too short milk cannot escape quickly enough and so the elevator tends to choke.

The writer wishes to acknowledge the assistance given in the testing of the elevator by Miss Kathleen Crampton, Herd Testing Officer, and Mr. Colin How, Dairy Board Consulting Officer, Rangiora. Both have made valuable practical suggestions and have carried out the trials under practical conditions.

Drums for Molasses

BECAUSE the suppliers in Australia insist that drums be made available before molasses can be sent to New Zealand for stock feeding purposes, the Commissioner of Supply has urged the seriousness of the position.

Last year sufficient drums were provided to allow the export from Australia of 1,500 tons of an order of 2,000 tons. The balance of the order will require 2,000 drums to be sent to Australia and the Department has placed an order for a further 2,000 tons, so that unless farmers provide themselves with an alternative container and return drums immediately they will be faced with a shortage of this stock food in the winter.

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Naturally, some relatively unimportant items are to-day in the background, but we know there'll be no serious shortages of seeds if a century's experience can avoid it.

DIG FOR A VICTORIOUS 1944

Arthur Yates & Co. Ltd.

THE SOUTHERN HEMISPHERE'S LARGEST SEED GROWERS

Lemon Culture in New Zealand

By W. K. DALLAS (N.D.H.N.Z.), Director, Horticulture Division, Wellington.

FOR many years lemon-trees (*Citrus limonia* Osbeck) have been grown in various parts of New Zealand, but only during the last 20 years has planting been carried out on a commercial scale. Lemons can be produced profitably in the Dominion, and already their culture has developed into a useful industry. The production of lemons on an economic scale is confined mainly to restricted areas at Keri Keri, Auckland, Tauranga, Gisborne and Hastings. There were 79,611 lemon-trees in registered orchards throughout the Dominion on the 1st October, 1943, distributed in the respective districts as follows:—

Keri Keri	10,543
Auckland	37,157
Tauranga	20,991
Hamilton	1,225
Gisborne	3,047
New Plymouth ..	358
Hastings	2,220
Wanganui	524
Palmerston North ..	521
Masterton	8
Wellington	24
Motueka	628
Mapua	686
Nelson	1,271
Blenheim	375
Christchurch ..	28
Alexandra	5

These figures do not include the lemon-trees grown in gardens throughout the country for private use.

It is unlikely that New Zealand will be able to develop an export trade in lemons, as the world's markets are already supplied by countries more favourably situated. The local market is capable of absorbing larger supplies of good-quality lemons in the months of January to April, but the trees at present planted are capable of supplying this trade for other months of the year. In the circumstances, the further planting of lemon-trees on anything like an extensive scale is a matter that should be approached with caution. The replacement of old trees should receive attention during the next few years as trees become available.

Varieties

The main varieties grown in the Dominion for commercial purposes are the Lisbon and the Eureka. Other varieties which are grown to a limited extent are the Villa Franca, Sweet Rind (a strain of Eureka), Genoa, and Meyer.

Lisbon.—Fruit of good quality, medium in size, oblong, of good even shape, and firm with a thin, smooth, pale-yellow rind, and with comparatively few seeds. This variety is a good cropper and produces much of its fruit in the interior of the tree. Two crops are borne each year, the winter crop being the main one. It has large thorns, which cause injury to the fruits coming in contact with them and make pruning and picking operations more difficult.

Eureka.—Fruit of good quality, medium to large in size, oblong, of good,

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Don't under-estimate this enemy. Rats are cunning and very destructive. Rats can live anywhere; they can climb or swim. And rats carry INFECTION.

Rats have caused plagues and fires, and today in New Zealand they are piling up a huge bill for damage. *A pair of rats can, in nine months breed a progeny of 880.* There are millions of rats in this country and they are increasing.

PREVENT! DESTROY!

Keep all food and waste in rat-proof containers. Remove all rubbish from the yard. Fill rat burrows with concrete which incorporates broken glass. Scatter powdered glass along the rat runway. Keep changing your methods. Try Epsom Salts (dry) in containers where rats can get at them. Use dogs and cats, or traps, or poison (e.g. barium carbonate). Fumigation may be necessary where burrowing is extensive. *Poison is free* from your local authority; they will advise you further.

Don't let up. The Rat is eating into your money and health. FIGHT TO KILL.

17

FOR A HEALTHIER NATION

even shape, and firm with fairly thick, wrinkled, pale-yellow rind, and with comparatively few seeds. The tree is a moderate and consistent cropper and is thornless. It comes into bearing earlier than Lisbon. Fruit is mainly borne near the tips of the branches and on young trees is inclined to be coarse.

Villa Franca.—Fruit of good quality, medium in size, oblong, slightly pointed at blossom end, of good, even shape, and firm with a thin, pale-yellow rind, and nearly seedless. The fruit from the young trees is inclined to be rough. The tree is a heavy summer bearer, a vigorous grower, and is practically thornless. The branches have shorter joints than other varieties, and on this account this variety is better suited to somewhat exposed situations. The tree is of a spreading and somewhat drooping habit.

Eureka (Sweet Rind). — Similar in appearance and quality to Eureka, but produces fewer seeds, yields a greater quantity of summer fruits, and produces a smoother type of fruit than Eureka. It comes into bearing early.

Genoa.—Fruit of good quality, medium in size, oblong, of good shape, smooth, and attractive in appearance. The tree is a heavy summer cropper and bears heavily while very young. It has a drooping style of growth, with fine laterals and foliage, and is thornless. It is not so vigorous as some varieties, but this probably can be overcome by an annual moderate thinning of the young fruits until the trees are six years from planting.

Meyer. — A sweet orange-lemon hybrid. Early fruiting, hardy and heavy cropping. Fruit smooth, thin skinned, juicy, good texture, medium size, oval in shape, and of a deep golden yellow colour. Becoming increasingly popular in domestic and commercial orchards. One main crop is borne, which reaches maturity towards the end of the month of May.

Stocks

Since the commercial varieties of lemons grown on their own roots are susceptible to disease they usually are worked on to more resistant stocks.

It is very important that the stock should suit the conditions of the locality where the trees are to be planted. Many trees have died, while others have produced light and inferior crops, through the use of an unsuitable stock. The stocks which are in most general use are the rough lemon known in

SUBSCRIPTION RATES.

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Australia and New Zealand as "Citronelle," a horticultural variety of the lemon *Citrus limonia*, and the sweet orange (*Citrus sinensis*).

Other stocks which are in use to a limited extent are sour orange (*Citrus aurantium*), and trifoliate orange (*Poncirus trifoliata*).

The rough-lemon, of which there are a number of strains, has been used extensively in a wide range of soils in all citrus-growing countries, but has the disadvantage of being sensitive to cold and susceptible to collar-rot, bark-blotch, gummosis, and citrus verrucosis in the heavier and wet soils. It is deep-rooting and has a well-developed root system, which encourages the trees worked on it, particularly those planted in light, sandy soils, to grow vigorously. In the early years of bearing the fruits produced are frequently poor in quality on account of the rapid growth of the trees, but after the advent of heavy bearing, fruit of good quality is produced.

The sweet and sour orange stocks are more resistant to diseases than the rough-lemon stock. On the orange, the trees do not come into bearing as early as they do on the rough-lemon, but remain productive for a longer period. Experience in other countries has demonstrated that the sweet-orange stock is suitable for light, deep, and well drained soils and has a comparatively shallow-rooting system. It produces well-shaped trees. In this country stocks of this orange are usually raised from selected pips of the Cook Islands sweet orange.

The sour, or Seville, stock is hardy and well furnished with deep-rooting roots and is adapted to most situations, but thrives particularly well on heavy soils.

The trifoliate orange is not recommended for commercial orchards, but may with advantage be used in domestic gardens where large trees are not desirable. It is a very hardy slow-growing stock with a dwarfing effect upon the scion. It develops a good deep-rooting system and is suited to localities with a rich heavy loam containing a fair amount of moisture. It is entirely unsuited to light, sandy soils.

Not a great deal is known of the performance of the Pomelo stock, but it is recorded that it is susceptible to collar-rot and gummosis in the heavier soils. It is also recorded that from a small and crooked tap-root a strong lateral root-system develops at a somewhat deeper level than the roots of the sweet orange.

Further experimental work remains to be done before definite recommendations can be made as to the stocks on which lemon varieties should be worked in this Dominion.

Raising Stocks and Trees

The practice in raising seedlings for stocks is to save fruits from selected trees which exhibit a strong healthy growth. The seed is removed from the fruits, and the largest are selected and are stratified in sand until the time for planting arrives. The period best suited for planting the seeds is from the latter part of September to the end of October. The seeds are set out in well-prepared soil in rows 9 in. apart and 2 in. to 3 in. apart in the row. The seeds are set in drills 2 in. deep and covered to the depth of 1 in. Until the seedlings are well established the soil is kept moist and well cultivated.

The seed-bed is protected from the winds and the hot sun by covering it with scrim or other suitable material. The soil should not be allowed to become baked.

By the autumn, if the plants make reasonable growth, they reach a height of from 8 in. to 12 in. In the following spring the strong plants are set out in nursery rows 3 ft. apart and from 12 in. to 15 in. apart in the rows. The weaker plants may be allowed to remain another year in the seedling-beds, but it is better practice to destroy them. Diseased plants should be discarded.

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In the year following the transplanting, when the sap is flowing freely, which is usually from November to March, budding is done in the same manner as on other classes of trees. The buds should, however, be inserted at a point 8 in. to 12 in. above the soil-level so as to lessen the possibility of the wood of the scion becoming contaminated with bark-blotch, etc.

Citrus stocks should not be budded until the wood has reached suitable dimensions, whether this be two or three years from the time the pip is sown. A lead-pencil is often referred to for illustrating the size of stock wood desirable, but a stock of this size cannot be relied upon to produce the growth required. Orange stocks which have attained a diameter of from ½ in. to ¾ in. and rough-lemon stocks of ½ in. will be found to give more general satisfaction than those of smaller diameter.

The budwood should be selected from trees which are thrifty, heavy regular bearers, and producing fruit of approved type. On account of the bud-variations which occur on individual trees the fruit on the branches from which the budwood is taken should be carefully examined to ensure that it has the desired characteristics. The buds near the tip and near the base of the bud stick should not be used. The budwood should be at least ¼ in. in diameter (about pencil thickness), rounded, and dark green in colour, with plump, well-developed buds.

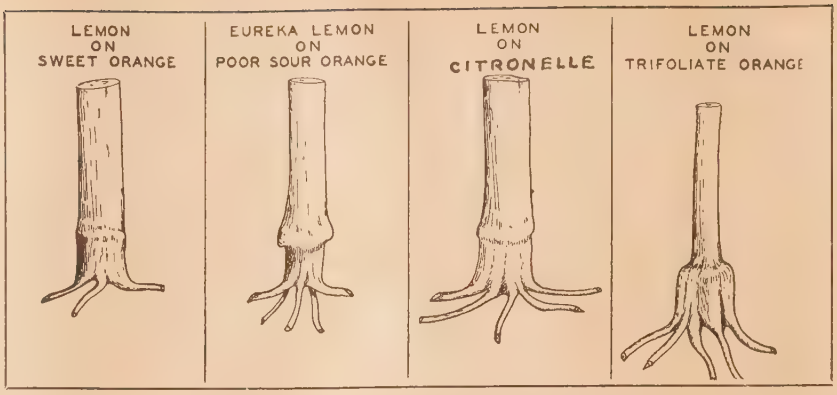

Fig. 1.—Typical citrus rootstock reactions.
Reproduced from "Citrus Culture in California," by R. E. Caryl.

When the buds are about to break in the following spring the stock should be cut back to within 8 in. above the bud. The wood left above the bud is used for tying the young growth to, as this is better practice than tying it to stakes. In the following spring, after the danger from frost injury is over, the wood above the bud should be carefully removed with a sloping cut and a protective wound-covering applied.

The budded trees should remain in the nursery row for eighteen months to two years before being planted out in their permanent positions. Detailed information in reference to budding is

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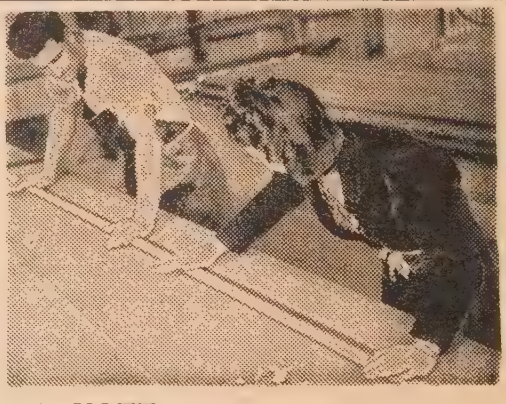

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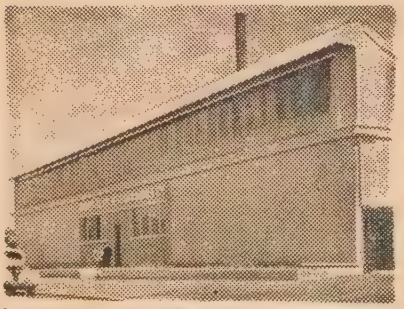

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given in Bulletin No. 81, "The Budding of Pip and Stone Fruit-trees."

Selecting Young Trees

In the establishment of a productive orchard success is largely dependent on the quality of the young trees.

Only thrifty well-rooted trees with well-coloured healthy bark should be selected. Weakly trees and those that have the lowest main branch less than 2 ft. from the ground-level should be rejected. Orders should be placed early with a reliable nurseryman, and no attempt made to obtain cheap lines. Maiden trees—one year from the bud—should have one clean, straight stem from the point where budded. Two-year-old trees should have at least three strong thrifty branches. Trees that have been summer-pinched in the nursery to cause them to branch, and have developed only weakly growth, should be avoided.

Trees should be unpacked as soon as possible after their receipt from the nursery, and at once heeled-in. Heeling-in is done by opening up a shallow trench in which the trees are placed in a sloping position and at right angles to the line of the trench. Although the trees may be laid closely together they should be placed singly so that the soil comes in contact with all the roots. Then the roots should be covered with soil, which should be trodden moderately firm, and then more soil should be thrown on so as to leave a loose surface. The trees remain heeled-in until required for planting. Before heeling-in, all roots bruised in the process of lifting from the nursery should be cut back to above the injury, since any damaged roots left to die back are likely to seriously interfere with the formation of new roots.

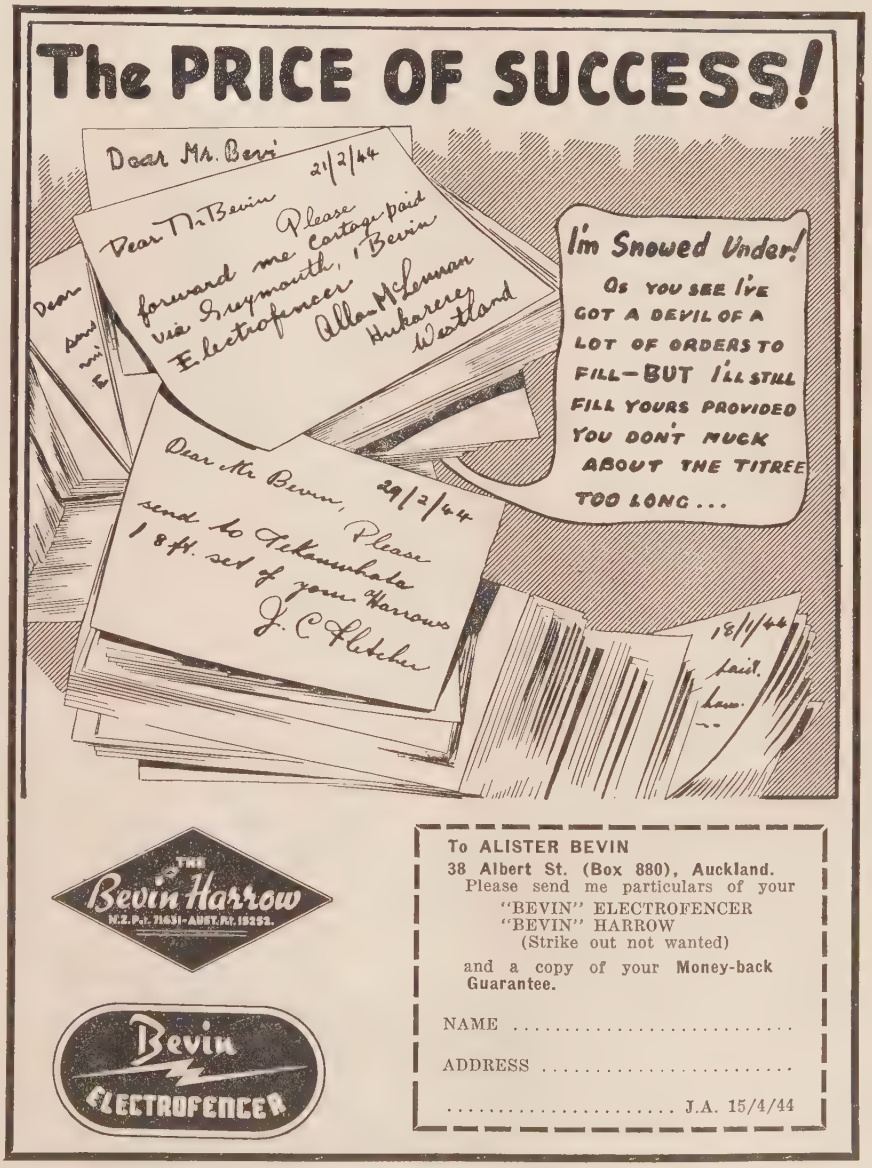
Climate and Soil

Among the essentials for the cultivation of citrus fruits are a comparatively warm climate, absence of extreme winter conditions and damaging frosts, a fair rainfall without long periods of droughts, and good friable soil with a subsoil that will allow of deep rooting and perfect drainage. Lemons are grown on many types of soil, but that recommended is a deep sandy or clay loam over a porous subsoil. Since the trees are evergreen they are never dormant, so that the soil in winter should be well drained and warm to permit of continuous root-growth. On most stocks lemon-trees are inclined to be shallow-rooting, and therefore the subsoil should be of a nature that will encourage deeper rooting. This will assist the trees to better withstand drought conditions. The subsoil should be loose and either naturally well drained or capable of being thoroughly drained by artificial means. Shallow soils, heavy clay soils, swampy soils, or soils that have a hard-pan or an impervious clay subsoil are unsuitable for citrus-culture.

As lemon-trees are liable to injury by severe frosts areas in which they occur should be avoided. The best positions for orchards are the northerly slopes of low hills with easy grades or level land not locked in by hills. Areas exposed to cold winds or where fog lies heavily should not be selected. The annual rainfall in the citrus areas of the Dominion, when evenly distributed over the year, is usually sufficient to meet the needs of the trees.

Preparation of Land

No planting should be done until the whole area is properly prepared. It is a mistake to plant trees with the intention of making the necessary improvements afterwards, since in very few instances is it possible to do this thoroughly. Where there is scrub growing on the land it should be grubbed and burned. It is inadvisable to plough woody matter into the soil, as this material is liable to become a host for fungous diseases. If there is a sward of grass the first ploughing should be shallow—e.g., skim-ploughing. The furrows should be broken down with discs and left for a few weeks. The land should be deeply cross-ploughed when the turf is dead, but if twitchy grass plants are present they should be grubbed and harrowed out before ploughing. The soil should be thoroughly worked and brought to a fine tilth. It is a good plan to devote two whole seasons to the preparation of the soil prior to planting. A crop of potatoes followed by lupins in the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first season, followed by further working and cover crop in the following season, leaves the soil in suitable condition to receive the trees. Superphosphate 44-46 per cent. at the rate of 3 cwt. per acre, carbonate of lime 3 cwt. per acre, and sulphate of potash 1½ cwt. per acre should be sown with each cover-crop. The cultivation necessary for the potatoes breaks up the soil and suppresses weed-growth, while the lupins supply a good body of humus. Where practicable, the ploughing-in of the cover-crop should be delayed until fibre has developed in the plants, which would be at the commencement of the flowering-period.

Drainage

Good drainage is essential to successful citrus-culture and must therefore be considered together with the preparation of the land. Such troubles as collar-rot, bark-blotch, etc., are frequently caused by insufficient drainage. Most orchard areas require additional drainage. A drainage scheme should be capable of carrying away the water quickly when heavy rains are experienced. Drains are laid between rows of trees where practicable to allow of lifting should cleaning out the pipes become necessary. The soil must be free from surplus water in the winter as well as in the summer. The water-level should be as low as possible. Good drainage greatly assists in the improvement of the fertility of the soil. Land which cannot be readily drained should not be selected for citrus planting, and where trees are planted on soil which cannot be readily drained it may be advisable to put the land to some other use.

Shelter

It is essential that the orchard should be adequately sheltered from all winds. Good, permanent shelter-belts around the boundary should be established at least two years before planting the orchard so that the lemon-trees may receive early protection. The shelter may consist of either *Cupressus lawsoniana, Cupressus benthamii,* or *Cupressus macrocarpa. Pinus muricata, Pinus insignis, Eucalyptus amygdalina, Bambusa vulgaris, Acmena floribunda, Hakea saligna, Cryptomeria japonica, Berberis vulgaris* and *Acacia dicunens* are alternative shelter trees planted by some orchardists.

(To be Continued).

PROGRESS TAKES A LEAP AHEAD IN WAR!

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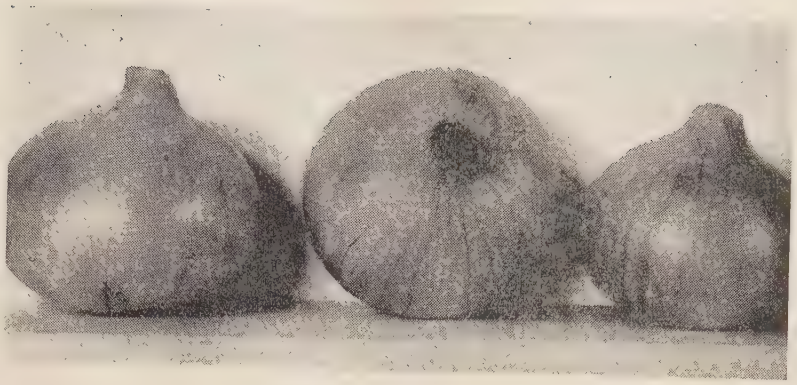
Keeping Quality in Onions

Some time ago as a preliminary to the certification of onion seed a keeping trial was conducted with onions grown from seed of different varieties and different origins. The results of this trial have since been analysed with a view to ascertaining the relationship between losses brought about by sprouting and those brought about by rots.

— By —
J. H. CLARIDGE,
Seed Certification Officer,
Wellington.



Good bulbs of the Pukekohe Longkeeper variety.

SAMPLES of seed from various sources were obtained for sowing the trial, part of the seed from each packet being sown on land in the Marshland district described as "flat sandy peat," and the balance on land in the same district described as "flat medium to heavy clay loam." The former sowing will be referred to as Plot A and the latter as Plot B.

The following varieties were represented:—

Pukekohe Longkeeper	14	samples
Straw Spanish	8	,,
Other Varieties	6	,,

The onions in Plot A made more rapid growth in the early stages than did those in Plot B, while in respect of the weight of f.a.q. onions obtained, the samples in Plot A averaged 22 tons per acre and those in Plot B 9 tons per acre. During the course of the keeping trial it became obvious that those from Plot B were superior in keeping quality. On completion of the trial on August 25, 44 per cent. of the onions from Plot A and 59 per cent. from Plot B still remained sound.

Average Loss

The average loss in bulbs from all lines of seed due to rotting and sprouting respectively was as follows:—

	Plot A.	Plot B.
Average loss due to rotting ..	26%	8%
Average loss due to sprouting	25%	26%

These figures show that, whereas the proportion of loss due to rotting in onions grown on peat soil is very much higher than in those grown on the clay soil, the proportion of loss due to sprouting is approximately the same in either case.

When the results from individual lines were examined it was found that in respect of the loss due to rotting there was no significant variation from line to line when grown on the same type of soil. Thus the loss due to rotting in bulbs from Plot A was in the main between 20% and 40%, and in bulbs from Plot B between 5% and 10%.

On the other hand, extreme variation was found in the loss due to sprouting when individual lines were compared, and these losses were remarkably consistent in bulbs from both plots. Thus the loss in lines of the Pukekohe Longkeeper due to sprouting averaged 10% in bulbs from Plot A and 6% in bulbs from Plot B. In lines of Straw Spanish the averages were respectively 35% and 37%. In the other varieties they were respectively 46% and 61%. The highest percentage of sprouting recorded was in a commercial grower's selection in which 76% from Plot A and 87% from Plot B sprouted.

The above results are confirmed by those obtained from a later trial consisting only of lines of seed of the Pukekohe Longkeeper where part of the seed was sown in the Pukekohe district and part in the Marshland district.

In this trial the figures for loss due to rotting and to sprouting at the end of August were as follows:—

	Pukekohe.	Marshland.
Average loss due to rotting	4%	12%
Average loss due to sprouting	8%	7%

It should be noted that the percentages of sprouting recorded in this trial approximate very closely the percentages recorded with Pukekohe Longkeeper in the earlier trial.

Conclusions

Two conclusions may be drawn from the trials reported upon:—

1. Loss in storage due to sprouting is very closely related to the variety or strain of onion and is apparently very little influenced by either season or soil conditions. Selection of strain therefore appears to be an important factor in controlling losses due to sprouting.

2. Loss in storage due to rotting appears to be little affected by the variety or strain of onion but is very largely governed by the general term "growing conditions." No evidence is at present available as to the individual factors most responsible for the development of rots during storage but it seems evident that soil and perhaps climate are both very important.

In choosing onions for a long period of storage, attention should be given to the following: the selection of bulbs from a strain which will not sprout freely, e.g., Pukekohe Longkeeper, and which are firm of flesh and well harvested as a precaution against development of rots.

Fertiliser Appeals

APPEALS for fertiliser for topdressing purposes must be lodged with the secretary of the District Council of Primary Production by April 30, 1944.

Appeals will be considered on the following bases:—

1. From any farmer who desires to obtain fertiliser for topdressing purposes and who has no allocation of fertiliser at present.

2. From any farmer who can show that by basing his allocation of fertiliser on the two years ended May 31, 1941, he was unduly penalised. The rehearing of appeals previously considered will be allowed.

All appeals must be in writing addressed by the farmer to the secretary of the District Council of Primary Production for the district in which the applicant farms. All applicants must state the name of the vendor from whom it is desired to obtain supplies of fertiliser in the event of the appeal being successful.

JOBS IN PEACE TIME

"THE NATION WHICH WISHES TO BE GREAT MUST PLACE ENTERPRISE AHEAD OF SECURITY—"

Achievement is not something which happens of its own accord. Behind every great musician, artist, or scientist, is the encouragement given by those with vision . . . the same vision which, coupled with daring and initiative, enables men to grasp and bring to realisation a new enterprise which benefits not only themselves and those around them, but the nation as a whole.

" . . . We must regard innovators, experimenters, starters of enterprises, as peculiarly useful citizens and go out of our way to furnish them a congenial and hospitable environment .... We must strive to increase the proportion of our citizens who become experimenters and innovators and who make their living, not by getting on someone else's payroll, but by creating payrolls of their own."

SUMNER H. SLICHTER,
Professor of Economics, Harvard University.

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Tropical and Sub-Tropical Fruits in the Gisborne District

The opening of the railway to Gisborne has brought the warm and fertile district, inaptly named Poverty Bay, into closer touch with the markets of the Dominion. It is to be expected, therefore, that more of its resources will be exploited, leading, doubtless, to commercial production of tropical and sub-tropical fruits.

— By —
J. D. KENNEDY,
Orchard Instructor,
Gisborne

FOR THE growing of some kinds of tropical and sub-tropical fruits, considerable areas at Wairoa and Gisborne are very suitable. Some fruits of recent introduction that are making good progress depend for their success on public appreciation and demand, as well as quantity produced per acre.

Avocado (*Persea gratissima*) is a tree of that class. Good fruit has been produced in the Poverty Bay district, but it is not the kind of fruit which makes an instant appeal to the public. It is, however, a very wholesome one, and the demand is assured when consumers begin to appreciate its quality. Quantity production per acre must be increased, and the variety trials now being carried out in the Ormond district give good promise of that being realised.

Ornamental, Too

Feijoa (*Feijoa Sellowiana*): This fruit grows and crops exceptionally well in all parts of the Gisborne district, and, if properly cared for, grows into a beautiful ornamental evergreen shrub 10 to 15 ft. high. Exceptionally good plants are grown by Mr. F. Winning, Ormond, while Messrs. D. S. Thompson and C. Berridge, nurserymen, Gisborne, have plants in their nurseries that crop exceptionally well.

Subject to good orchard conditions and proper attention, the plants begin to bear about three years after planting, and up to six years of age the trees produce anything from 10 lb. up to half a bushel of fruit per annum. From seven years upwards, the average production is approximately 1 bushel per plant. The fruit is oval in shape, dark green, and rather unattractive in colour. When ripe, it has a beautiful faint pineapple aroma, and it is good for dessert or for jellies and jams.

Magnifica and Sellowiana: The fruit from these varieties averages 2 inches in diameter by 2 to 2½ inches in length.

Superba and Choiseana: The fruit from these varieties averages in size approximately 1¾ inches by anything up to 2½ to 3 inches. This fruit ripens in April, and will keep well up to four to six weeks after harvesting.

Fine Trees

Persimmon (*Diospyros Kaki*): This fruit crops reasonably well in Gisborne, especially in the Ormond district, where some very fine trees are grown by Mr. C. E. Grey.

Okame: This variety ripens about March. It is one of the largest, and being a round, flat type, firm and a good keeper, it is a good variety for domestic purposes. The average size is 2¾ inches in diameter.

Dia dia maru: Rich orange-red in colour, oval in shape, and one of the oldest varieties in New Zealand, this fruit jellies up quickly, and is not as good a keeper as Okame. The average size is from 2¼ to 2½ inches in diameter.

Loquat (*Eriobotrya japonica*): Loquats grow prolifically in all parts of the district. One very fine tree of Thames Prize is grown by Mr. R. Andrew, Ormond Road, Gisborne. The fruit from this tree is a rich golden yellow, very fleshy, and of good flavour. The average size ranges from 1½ to 1¾ inches in diameter. The ripening period for all varieties of loquats is November and December. Trees begin to bear approximately three years after planting, but unless thorough attention is given to pruning, they are subject to alternate-year cropping.

Doing Very Well

Olives (*Olea europaea*): The planting of olives can be recommended in Gisborne. Two very fine young trees —one Sevillano and one Mission—are grown by Mr. D. S. Thompson, Palmerston Road, Gisborne. These trees have been planted for some ten years. Five years from planting they began to crop, and eight years after planting they averaged 20 lb. of fruit. The present average height is 9 ft. with a spread of 5 ft.

Sevillano is a popular variety for domestic use. It is rich red in colour, oval in shape, and very much resembles a *Prunus Pissardi* plum in appearance. It makes good pickles.

Mission is a good cropper. The fruit is slightly long and pointed. It is not as rich in colour, nor does it appear to have the same contents, as Sevillano. This variety is rich in oil, but not as popular as the above-mentioned variety for domestic purposes.

Three wild olive trees are growing in the Bushmere district, and each year they are laden with fruit, which is oblong in shape, but small and with very little flesh. These trees are approximately forty years old, and their estimated height is at least 40 ft. They are regular croppers. As the whole of the fruit has never been harvested, it is difficult to give an accurate estimate, but the crops are about 160 lb. per tree.

Good Crops

Passion Fruit (*Passiflora edulis*) grows and crops well in all parts of Gisborne, especially the Gisborne Borough and Ormond district. Mr. C. E.

Grapes in a Gisborne vineyard.

Grey, Ormond, has some very fine bushes.

Round Purple: This is a very popular variety. The average size of the fruit is 1⅞ to 2 inches in diameter, and it is a good cropper. This fruit requires a fairly rich soil, and in the summertime, if sufficient moisture is not available, the green fruit shrivels very badly. Care must be taken to ensure that planting is not carried out in soil that is subject to excessive moisture. This fruit commences cropping two years from planting, and the average fruiting life of a plant is four years. The harvesting period is February and early March.

Perfecta: Large, round, average size 2½ inches in diameter. This variety crops as heavily as the round purple variety, but has not the same keeping qualities, being inclined to shrivel a week or so after picking.

Grapes (*Vitis vinifera*): This district is particularly suitable for grape-growing, especially Albany Surprise and Black Hamburg varieties, and heavy crops are regularly produced outside in all localities. Exceptionally heavy crops of excellent quality fruit are grown in the Hexton district by Mr. F. Chitty. Excellent crops of Albany Surprise and Black Hamburg are also grown by Messrs. R. Hansen, Hexton, and F. Wohnseidler, of Ormond.

For Twenty Years

There does not appear to be any limit to the fruiting age of vines; some have been cropping continuously and heavily for the last twenty years. The cropping season extends from the middle of February to the end of April. During the 1943 season, large quantities of outdoor grapes were consigned to the Wellington and Manawatu districts.

Black Hamburg and Gros Colman crop exceptionally well in glasshouses. Mr. J. C. Hardy, Patutahi, regularly produces heavy crops of large, good quality fruit.

Walnuts (*Juglans regia*) grow and crop exceptionally well in all parts of the district. Three varieties are grown—a small, almost round variety, with a very hard shell which will keep for years; a soft-shell nut, oval in shape, that is recommended for immediate use and is not a good keeper, but is of good average size; and also a large rough-shell variety of good quality that is an early cropper.

Some very fine trees are grown by Mr. C. Tietjen, of Bushmere. They are over twenty years old, but are regular croppers, averaging approximately 60 lb. of nuts per tree.

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the months May, 1943, to February, 1944, have been compiled by the Livestock Division:—

District.	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Pigs
North Island.						
Meat-export Slaughterhouses—						
Auckland	152,288	592,592	345,381	256,594	1,303,067	218,918
Poverty Bay-Hawkes Bay	26,128	59,393	396,030	257,795	1,192,245	23,387
Taranaki-Manawatu ..	72,684	203,489	324,077	258,426	1,219,855	119,097
Wairarapa-Wellington ..	27,568	28,945	257,683	172,496	773,944	25,999
Totals	278,608	884,419	1,323,171	945,311	4,489,111	387,401
Abattoirs	113,039	31,957	547,683	213,254	120,171	47,322
North Island Totals ..	391,647	916,376	1,870,854	1,158,565	4,609,282	434,723
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough ..	1,641	10,551	15,473	8,419	132,957	10,082
Canterbury-Westland ..	11,918	37,225	215,777	180,600	1,162,605	33,002
Otago-Southland	11,468	35,457	133,587	83,273	1,684,829	6,057
Totals	25,027	83,233	364,837	272,292	2,980,391	49,141
Abattoirs	47,640	10,002	231,627	133,992	52,684	12,122
South Island Totals ..	72,667	93,235	596,464	406,284	3,033,075	61,263
Dominion.						
Meat-expt. Slaughterhouses	303,635	967,652	1,688,008	1,217,603	7,469,502	436,542
Abattoirs	160,679	41,959	779,310	347,246	172,855	59,444
Grand Totals	464,314	1,009,611	2,467,318	1,564,849	7,642,357	495,986
Same Period, 1942— Meat-export Slaughterhouses and Abattoirs ..	527,326	1,011,694	2,348,226	1,564,206	8,089,665	570,663
Same Period, 1943— Meat-export Slaughterhouses and Abattoirs ..	423,916	1,038,402	2,480,957	1,513,473	8,686,801	681,268

Slaughterings of Pigs

The 91,555 pigs slaughtered at meat-works and abattoirs during the month of February, 1944, were distributed in weight ranges, approximately, as follows:—

Up to 60 lb.	665
61 to 120 lb.	35,659
121 to 175 lb.	48,576
176 to 185 lb.	2,585
186 to 200 lb.	920
Over 200 lb.	2,056
Sundries	1,094
	91,555

The grading of porkers was 94 per cent. of 1st quality, 6 per cent. of 2nd quality, and that of baconers was 78 per cent. prime 1's, 17 per cent. of prime 2's, and 5 per cent. of 2nd quality.

In the different weight ranges the grading was as follows:—

	Prime 1's.	Prime 2's.	Seconds.
121-175 lb.	79 per cent.	16 per cent.	5 per cent.
176-185 lb.	70 per cent.	23 per cent.	7 per cent.
186-200 lb.	72 per cent.	15 per cent.	13 per cent.

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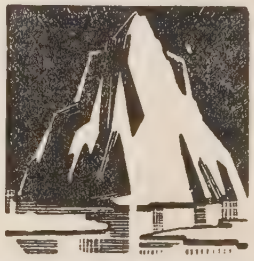

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Backyard poultry-keeping can be made a valuable aid to the war effort and an asset to the householder, since egg-production, although in small quantities, will in the aggregate help to meet the heavy demand for eggs, so apparent in the Dominion to-day. To keep fowls in health and reasonable production, a knowledge of certain fundamental principles in poultry-keeping is essential. This article provides the minimum knowledge that the backyard poultry-keeper should possess.

Backyard Poultry-Keeping

— By —

F. C. BOBBY,

Superintendent of Poultry Husbandry, Wellington.

WHERE poultry have not been kept previously, before any start is made information regarding the by-laws regulating the conditions under which poultry may be kept should be obtained from the local authorities (Town Clerk).

Registration is not necessary where a lesser number than 25 birds is kept. Under the Poultry-runs Registration Act, 1933, any person keeping 25 or more hens and ducks (not including male birds) and producing eggs for sale is required to register his poultry-run. This may be done by application to the nearest post-office. Registration does **not** render such poultry liable to additional regulations or special inspection. Any poultry-run, however small, is liable to inspection for sanitary conditions or if disease among the birds is suspected.

Housing Poultry

The following points should receive attention when constructing a house for poultry:—

(a) **Site.**—The house should face approximately north to get the maximum of sunlight and be placed in a dry position.

(b) **Size.**—Allow 3-3½ square feet of floor space per bird if the birds have an open or covered outside run, in addition to the laying and roosting house. Where the birds are to be entirely restricted to the poultry-house, allow 4-4½ square feet floor-space per bird. Each bird should have 20-25 cubic feet of breathing space in the house.

It cannot be over-emphasised that a small run upon which poultry have run for a considerable time and which in consequence has become dirty and "poultry-sick" is a menace to the health of all birds allowed to use it. It is preferable to use a larger poultry-house and to keep the birds confined to this house rather than to give them the use of a dirty and overcrowded outside run. Where small outside runs are used, they should be dug over at least once a year and dressed with lime—preferably quick or burnt lime.

(c) **Floor Material.**—This should be of concrete or, alternately, 1 in. thick timber, raised at least 1 ft. off the ground, on brick or concrete piers. Wooden floors placed close to the ground often harbour rats.

(d) **Ventilation.**—Most essential, but must **not** lead to **draughts**. Should be arranged to allow air to enter at both the front and back of the house at the level of the eaves. The front of the house should be partially open to let in plenty of air and sunshine—both essential to health.

(e) **Roosts.**—Perches, placed at the back of the house, should allow not less than 8 in. of space for each bird. A perch should be about 2 ft. from the floor, and be made of 3 in. by 2 in. timber, with the two edges upon which the birds perch rounded off.

(f) **Nest-boxes.**—Allow one nest-box to three layers. It should be from 12 in. to 14 in. square and 12 in. high.

(g) **Food-trough.** — This may be wooden and V-shaped. Allow 2 ft. length for six birds, 5 ft. for twelve birds, and 8 ft. for twenty birds.

(h) **Litter.**—Maintain 4 in. of clean dry litter on the floor. This may be straw, sawdust, shavings, or similar material. Clean litter, but not strong-

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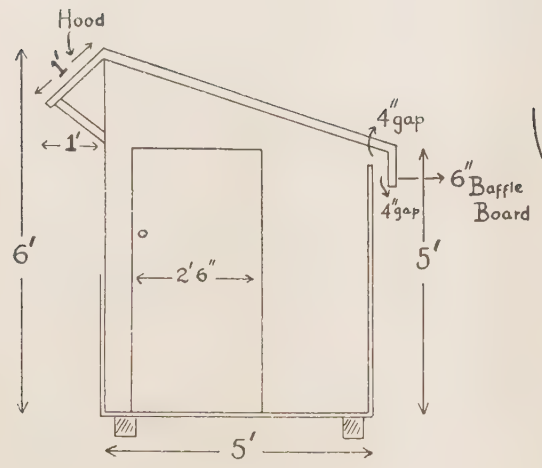
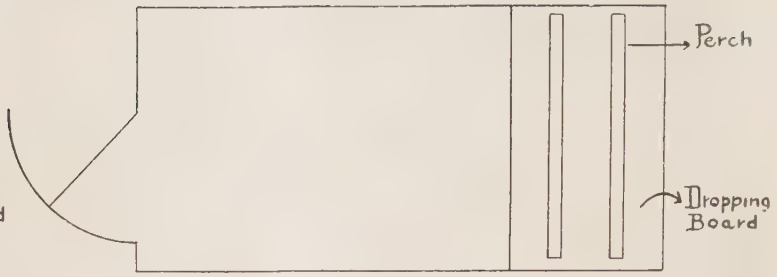
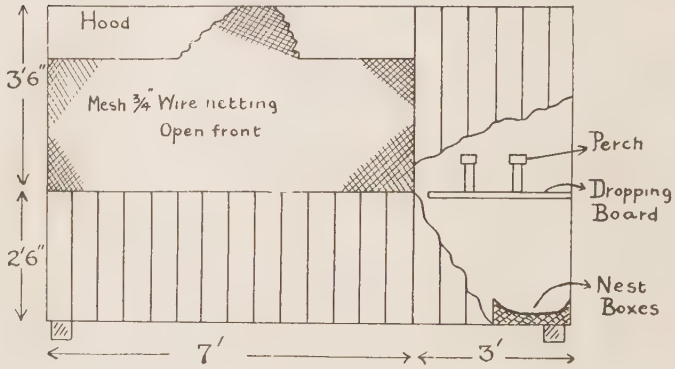


END. ELEVATION

Back-yard Poultry House.
for
12 Birds

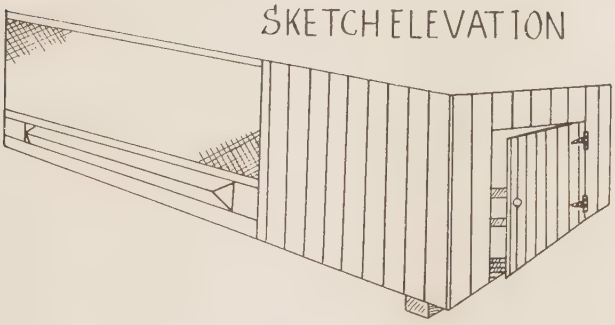
PLAN.





FRONT. ELEVATION

SKETCH ELEVATION



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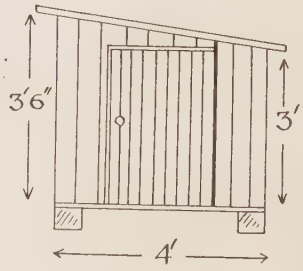

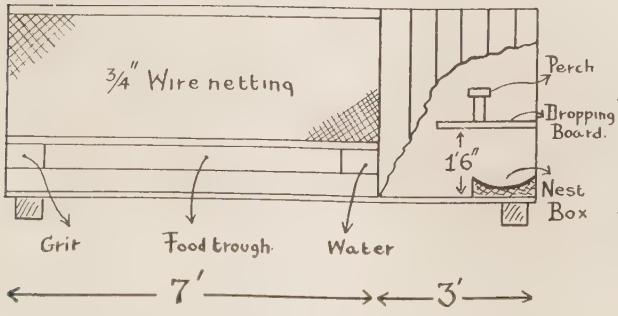

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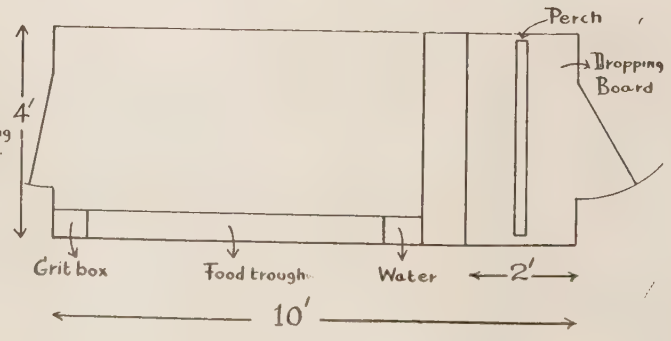

PLAN

Back-yard Poultry House for 6 Birds

smelling material, should be put in the nest-boxes.

Laying Birds

There is really no best breed for laying purposes, and, in general, White Leghorns, Black Orpingtons (or Australorps), Rhode Island Reds, or Barred Rocks from good-laying stocks will all prove satisfactory. For laying purposes only (not breeding), crosses between the White Leghorn and Black Orpington or White Leghorn and Rhode Island Red, providing good parent stock is used, can also be recommended.

Great care should be taken when purchasing laying birds to see that they appear healthy, reasonable in size for the breed, and in good body condition. If purchased birds are unhealthy looking or poor in condition on arrival, they should be fed, watered, and then returned to the owner (seller) without delay. Poor and unhealthy stock are rarely profitable and often prove to be a dead loss. The best sources for laying stock are commercial poultry-keepers or farm flocks; indiscriminate buying in public markets is not to be recommended. Birds sent to market, while possibly in good health, are often cull birds, which the commercial poultry-keeper considers to be unprofitable egg-producers. If unprofitable for the commercial poultry-keeper, they are unlikely to be satisfactory for the back-yarder.

A matter of considerable importance is the age up to which birds are kept for egg-production. There is a tendency among many back-yard poultry-keepers to retain birds for three, four, or more years. While these old birds may have become pets, **they are invariably unprofitable**, and should be disposed of without delay, when out of production. A laying bird produces the maximum output of eggs during her first or pullet year, and, in addition, under good management will lay through the winter when eggs are scarce. Thus, if a pullet lays 150 eggs in her first year, only approximately 113 eggs may be expected during the second laying season, and 85 eggs in the third season. For this reason, poultry-keepers are urgently recommended to retain only their best birds for two seasons, and to dispose of these before the third year of laying. Remember also that hens moult during the higher egg-price season, and are out of lay for about eight to ten weeks. Many backyard poultry-keepers are unable to distinguish between birds of different ages. To avoid this confusion, place a ring, either celluloid or metal, on all pullets retained at the end of their first laying season and before new stock is purchased.

Never retain any ailing bird which appears to be "wasting away." Kill and destroy any such bird without delay.

Feeding

Healthy birds in lay require grain and mash (meal mixture) daily in about equal parts of each by weight. As a guide, it may be assumed that a laying bird will consume approximately 2 oz. of grain and 2 oz. of mash per day; but the quantity required will vary according to egg-production. The amount given—either grain or mash—should be cleared up readily within 20 to 30 minutes, when the birds should appear satisfied. If food is left over at the end of this period, cut down slightly the amount given at the next meal, or should the birds appear unsatisfied by the amount given, then increase the next meal.

There are two satisfactory systems of feeding, and the one most convenient to the backyard poultry-keeper should be chosen: (1) Wet mash at breakfast time, grain mid-day, and grain late in the afternoon; (2) grain at breakfast time, wet mash between 10 a.m. and 11 a.m., and grain in the late afternoon. Thus:—

First Grain Feed: Approximately ½ oz. per bird, or ¼ lb. for six birds, ½ lb. for 12 birds, and so on proportionately.

Second Grain Feed: Approximately 1½ oz. per bird, or ½ lb. for six birds, 1 lb. for 12 birds, and so on proportionately.

Mash Feed: Approximately 2 oz. per bird, or ¾ lb. for six birds, 1½ lb. for 12 birds, and so on proportionately.

For grain, wheat may be used, or (a) mixture of half wheat and half maize; (b) mixture of half wheat and half barley—all parts by weight.

Mash.—Any of the following may be used, or, alternately, a ready-mixed laying-meal bought from a reputable food-merchant:—

(a)	Pollard	7 lb.
	Bran	2 „
	Meat-meal	1 „
		10
(b)	Stock-meal	5 „
	Bran	4 „
	Meat-meal	1 „
		10
(c)	Pollard	4 „
	Bran	2 „
	Barley-meal	3 „
	Meat-meal	1 „
		10

Note that all figures given are by **weight** and not by measure.

Most householders have a certain quantity of household scraps available daily. These should be used with any one of the above-mentioned mashes, and by so doing the amount of mash required may be reduced daily (a) in winter by ½ oz. per bird; (b) in summer by 1 oz. per bird. In this way not only is the cost of feeding decreased, but supplies of poultry foods will be conserved. This is **essential at the present time.**

Warning

Do not use any household scraps containing an appreciable amount of

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CONCENTRATED. Tomoana Dairy Ration has been scientifically evolved and is compounded under strict laboratory control. It has already been proven as an efficient and economical ration for commercial dairy herds. The brand 'TOMOANA' is your guarantee of quality. Tomoana Dairy Ration is a 'concentrate', as will be found from feeding even limited quantities. Give it a fair trial and judge results for yourself.

TRY IT NOW! Autumn pastures may appear to provide ample feed for milk production; but quantity will not replace lack of quality, and yields fall away. The reason is want of *digestible* nutrients. By feeding small quantities of Tomoana Dairy Ration, the nutrients will be supplied to *maintain milk production.* Cows that have the productive capacity should get 2 lbs. of Tomoana Dairy Ration daily.

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common salt or any liquid containing salt, such as water in which ham has been boiled. Salt in quantity is poisonous to poultry. Bread crusts, scraps of meat, cooked green vegetable or potatoes, potato peelings, etc., are all good food for poultry.

Wet mash, although termed wet, should not be really wet or sticky—it should be moist and crumbly.

In addition to the foods mentioned, supply the birds daily with succulent green food (cabbage, grass lawn clippings, lettuce, rauraki, etc.), and place crushed oyster-shell before them at all times. The latter helps to "shell" the eggs satisfactorily. A number of householders fail to give meat-meal in their poultry-mash mixtures. This is a bad omission, since meat-meal (protein) is an essential for egg-production, **particularly during winter.**

Disposal of Eggs

The restriction on the sale of eggs is not as severe as many producers believe. Apart from the main marketing areas—that is, Auckland, Christchurch, Wellington, Dunedin, Napier, and Hastings — and such emergency areas as may be declared from time to time, sales of eggs may be made direct to the local storekeeper, retailer, or consumer. Where the poultry-run is situated within any of the foregoing areas or such further localities as may be later declared to be emergency areas, sales may still be made direct to the consumer if delivery is taken at the run where the eggs are produced.

In the event of further areas being declared as emergency or marketing areas, adequate notice will be given in the local press in order that all poultry-owners may be acquainted with the conditions applying to their particular locality.

In the existing marketing and emergency areas, depots have been set up for the receipt of eggs, and these depots have been dispersed, so as to avoid as much inconvenience to the producer as possible. Should any doubt exist as to the proper course to be followed for the disposal of eggs in these areas, inquiries should be made with the local storekeeper or with the nearest branch of the Internal Marketing Division, who will render prompt and correct information.

The Government has increased this year's summer price by 2d. per dozen in both the North and South Islands, and while the increase in price refers only to the marketing areas, prices generally in the country districts will relate to the prices in the nearest marketing area, less, of course, transportation and handling charges.

It is not the intention of the Government to interfere with any existing local organisation covering the collection and disposal of eggs, providing that any such arrangements are efficient and come within the general plan for equitable distribution and rationing to armed forces, invalids, and civilian needs.

Backyard poultry-keepers are reminded that advice by letter or practical help with poultry on their premises may be obtained by writing to the Poultry Instructor, Department of Agriculture, at Auckland, Wellington, Christchurch, or Dunedin. Where information is required as to the cause of death of a bird, the latter should be forwarded, freight paid, to the chief Diagnostic Officer, Animal Research Station, Wallaceville. A post-mortem report will be supplied and advice, where necessary, given free of charge.

General Information

Lice and Mites:—Poultry are subject to lice on their bodies. They may be most easily seen by looking under the feathers round the vent. These undesirable parasites can be destroyed by lightly painting the roosting perches with nicotine sulphate just before the birds go to perch. Nicotine sulphate may be purchased from seed-merchants, and should be treated with due caution as a poison.

Red mites collect during daylight underneath perches, where they rest on a wooden support, and attack the birds at night. To prevent this, creosote or old motor oil should be painted on the underside of the perches where they rest on the supports. Perches should also be creosoted at least once a year, to prevent these mites collecting in cracks in the wood.

Male Birds.—Male birds are not necessary for egg-production, while infertile eggs keep better than fertile eggs—especially during hot weather. Only infertile eggs should be used when preserving eggs.

Egg-eating.—If birds start egg-eating, collect the eggs at frequent intervals in order to break them of this vice. An egg with its contents removed and filled with mustard, or mustard and a little kerosene, acts as a good deterrent if placed on the floor for the birds to peck.

Broody Hens.—These should be removed from the nest-boxes as soon as observed, and placed in a special coop where the bird will get plenty of fresh air. A coop with a slatted floor and slatted sides and front is suitable for this purpose. Broody hens **should be well fed**—give them mash and grain as supplied to the other birds. After four days in the coop the bird should be put back with the other birds.

Don't Overcrowd.—Don't make sudden changes in the birds' diet, especially during winter. **Don't** leave the birds without clean water at any time.

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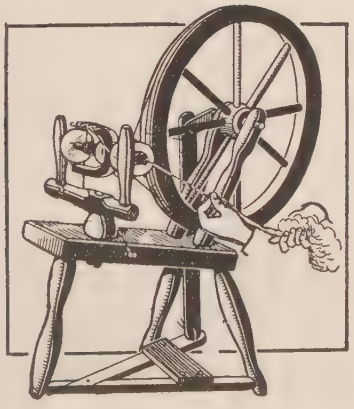

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Careless Handling Of Pigs

Bruises And Injuries Can Be Prevented By Simple Precautionary Measures

J. E. McILWAINE, Assistant Director
Livestock Division, Wellington

Showing damage to pigs' carcasses by whips, hits and kicks.

IT IS necessary to draw the attention of all people engaged in the handling of pigs to the prevalence of bruises and weals on various parts of the skin of these animals.

Some time ago an appeal was made on similar lines in regard to the handling of lambs and sheep in order to avoid bruises and superficial blemishes. The position in regard to pigs is of equal importance, as many animals arrive for slaughter in a marked and bruised condition.

The economic aspect of the matter should appeal to all concerned. Farmers, dealers, and carriers should do their utmost to avoid causing skin blemishes, which may bring about the degrading of otherwise prime porker and baconer carcasses, whether intended for local curing or for export overseas.

Pigs show superficial marks after slaughter more readily than other classes of animals, but to some extent the amount of superficial marking can be reduced by resting the pigs for a period of up to 36 hours before slaughter. It has been shown that this practice also improves the curability of the carcass, but quite apart from this it definitely tends to tone down the effects of bruises and skin marks, and is a practice that can be recommended for the consideration of slaughterhouses.

Appeal Made

In many cases it is difficult to know the actual culprit when pigs pass through saleyards and various carrying agents. Hence, an appeal must be made to all concerned. It should be realised that the handling of pigs is a tedious business, and plenty of time should be allowed for carrying out the work in each case. It is desirable that the position should be very considerably improved, and everyone should share the responsibility of bringing about an improvement.

> Concern is felt in many quarters at the prevalence of bruises and weals on various parts of the skin of pigs. Farmers, dealers and carriers should do their utmost to avoid causing skin blemishes, which may bring about the degrading of otherwise prime porker and baconer carcasses. Much can be done by a little more care and patience, the use of a proper yard and loading race, and the absolute prohibition of rough handling, stock whips and sticks.

The farmer-producer can do his part by carefully loading and unloading his pigs when he takes them to the saleyards or to the works. He can assist the carrier in loading pigs at the farm and impress upon him the need for careful handling in transport.

Here it is important to note the assistance to be obtained by the provision of a simple yard and loading race. Such a facility will do much to assist careful and efficient handling and loading at the farm. The amount of time wasted in trying to hunt pigs from one place to another with sticks is as nothing compared with the damage which is done to tempers and nerves and to those of the hunters.

This trouble is often seen at its worst on the farm where no loading facilities are available for the convenient despatch of pigs to the works. A number of people and dogs are seen attempting to catch pigs in the paddock, the pigs being eventually hunted to a standstill, when they are caught and literally carried one by one into the waiting lorry. A fevered condition is thus set up, and a good deal of unnecessary bruising results from this method of loading. Because of the great importance attached to this aspect of the matter, sketches and diagrams of suitable loading races are published with this article.

Lifting Pigs

In cases where it is necessary to lift pigs the correct method of securing a pig is to seize a hind leg and not to depend on the ears or tail. If porker pigs are being dealt with the near hind leg is seized firmly below the hock with the right hand, and the left hand and fore-arm are then placed underneath the breast behind the forelegs. The pig can be lifted and carried in this way without bruising. Heavier pigs will require to be lifted by lock-

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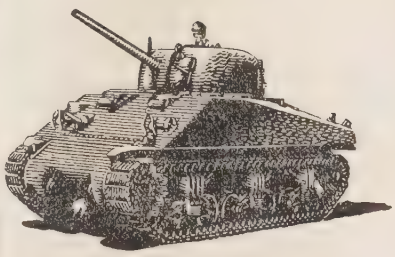

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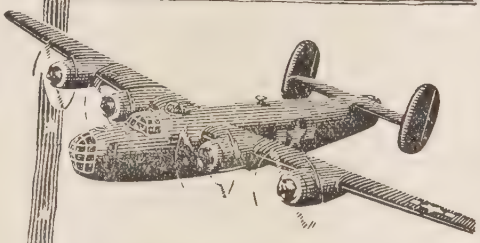

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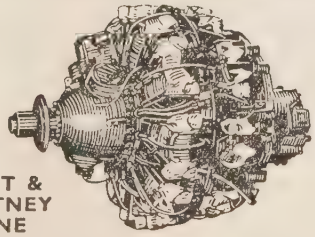

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ing both arms around the chest behind the forelegs.

A careful system of handling pigs should be followed in all cases. There is a certain amount of unavoidable bruising which will continue to be a source of loss. When pigs come on heat in transit they generally get badly scarred and bruised over the loins and back by the feet of other pigs in the truck. Such bruising is unavoidable or impracticable to control.

Damage by Carriers

Carriers who habitually deliver bruised and marked pigs at the works or rail should be warned and cautioned, as such injuries are reflected in the grading sheet returned to the farmer. As far as possible, the carrier's trucks and railway trucks should be loaded with pigs of the same class —porkers with porkers, baconers with baconers, and choppers separately. Obviously marked or bruised pigs should be well rested before slaughter. At the works careful untrucking is necessary, and care is necessary in driving the pigs into the holding pens and up the race to the sticking pens.

It is surprising how an apparently innocent-looking mark on the live animal shows up when the pig has been scalded and cleaned. These marks become still more accentuated when the carcass has been hanging for some hours in the cooling-room. It is possible for the inspector to give the carcass the benefit of the doubt at the time of inspection and for extensive markings to show up when the carcass has been chilled.

Few people seem to realise how easy it is to raise a weal on the back, loins, and hindquarters of pigs. The thicker skin of the head and neck is not easily marked, but generally speaking the pig is very susceptible to skin blemishes and weals.

Cause of Blemishes

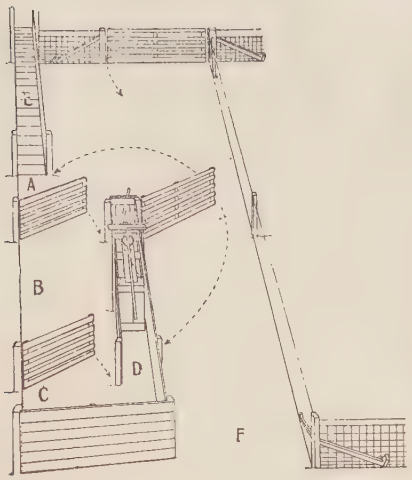
How are these blemishes caused?

It appears from the very nature of the reddened weals that the majority are caused through the use of stock whips, fine sticks, and even dog bites. Occasionally those about the head and neck are caused through the pigs fighting among themselves in the trucks.

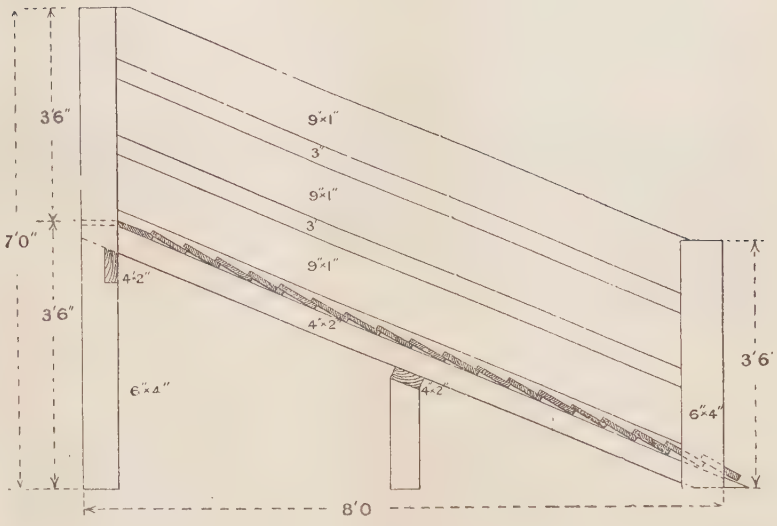
The larger, more diffuse bruises are apparently caused through kicking and pushing and general rough handling in and out of trucks. In exceptional cases a stag or rig pig placed unknowingly in a truck with other pigs can do immense damage. In this case, the tendency is to produce actual flesh wounds, gashes due to the tusks, rather than bruises or weals. In the latter case the farmer must be blamed for allowing a stag to be trucked with other pigs.

A very great amount of this injury could be avoided if reasonable care

LOADING AND WEIGHING PEN - SUITABLE FOR THE WAIKATO PLAN
WALLS OF PEN 3'6" HIGH



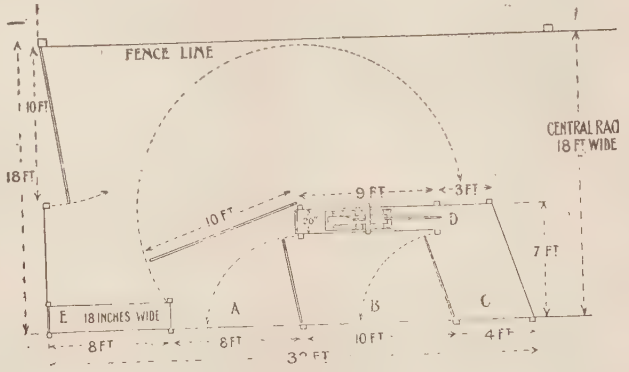
LOADING RACE



Timber Required and Costs.

	Running ft.	
Uprights for race	21 ft.	6 x 4
Pillows and ramp joists ..	24 ft.	4 x 2
Side of race	54 ft.	9 x 1
Ramp of race	30 ft.	6 x 1

Ground and Perspective Plan of Loading, Grading and Weighing Yards.



A. Receiving Yard.
B. Holding Pen.
C. Grading Pen.
D. Weighing Race.
E. Loading Race.
F. Central Race.

The 10ft. gate hinged to the front corner of the weighing race swings as indicated by the arrows. When pigs are brought into the yard from the central race F., they have a clear view through the end gate and fence and readily enter the receiving yard A. By closing the gate from the weighing race to the loading race there is no possibility of the pigs escaping as they begin to find themselves confined in the yard A.

All walls and gates are 3ft. 3in. high of 6 x 1, 9 x 1 or 12 x 1 boards, which should not be spaced more than 3in. apart.

and co-operation were forthcoming. In the first place, the use of stock whips should be absolutely prohibited in the driving or loading of pigs. The use of sticks should be confined to the least vulnerable and least valuable parts of the pig.

Sticks and Stock Whips

It should be recognised in the pig world that the only parts which cannot be seriously injured by sticks are below the hocks on the hind legs and the snout in front. In fact, a broad lash made from a piece of old cycle or car tube would serve a more useful purpose than sticks. All kicking, rough handling, and biting dogs should be prohibited.

It is true that the pig is considered a most obstinate animal, and it is said that it frequently takes the opposite direction to that desired. At the same time, the use of proper loading races or banks and the exercise of patience, with permissible persuasion on the parts already indicated, will do much to eliminate this as a cause of degrading of carcasses.

Considerable progress has been made in raising the standard of pig husbandry in recent years, resulting in a reduction of castration abscesses, pleurisy, and other septic conditions. It is hoped that this progress will continue, but some of this good work will be nullified if unnecessary bruising and marking still persist.

Complaint From Overseas

There have been complaints from overseas in regard to the skin marks, blemishes, and weals seen on New Zealand pigs in the Home markets. It appears that marked pigs are not desired by the trade even though they are in a lower grade and can be purchased at a cheaper price. Weals and skin marks are also a distinct reflection on our careless methods of handling the live animals. No amount of scalding, scraping, singeing, and dressing can remove some of the marks, and in some works singeing is not possible and porkers are not singed as a general rule.

As the matter can be rectified with the exercise of a little more care and patience, the co-operation of all those engaged in the handling of pigs is much to be desired in the interests of the industry as a whole.

Radio Broadcasts

RADIO talks to farmers will be given from station 1YA, Auckland, at 7.15 p.m., on the following dates:—

May 1—"Suitable Crops for Poultry," by Mr. E. C. Jarrett, Poultry Instructor, Department of Agriculture, Auckland.

May 8—"Achievements of Primary Production Councils," by J. E. Bell, Secretary, National Council of Primary Production, Department of Agriculture, Wellington.

May 15—"Field Work for the Coming Month," by P. S. Syme, Instructor in Agriculture, Department of Agriculture, Warkworth.

May 22—"Young Farmers' Clubs' Session," by D. S. Ross, Past Dominion President of the Y.F.C. Federation.

May 29—"First Aid to Farm Stock," by G. A. Thomson, B.V.Sc., Veterinarian, Department of Agriculture, Auckland.

Pig Industry Broadcasts

Under the auspices of District Pig Councils concerned, broadcasts will be delivered in May as follows:—

Auckland—1YA, May 18, 7.15 p.m., "Concrete for Piggeries," by F. Barwell, Supervisor, Bay of Plenty District Pig Council.

Wellington—2YA, May 16, 7.20 p.m., "Equipment that Makes Pig-keeping Easy," by C. H. M. Sorensen, Supervisor, Taranaki District Pig Council.

Christchurch—3YA, May 18, 7.15 p.m., "Pig Production Without Dairy By-Products," by H. W. McIntosh, Supervisor, Canterbury District Pig Council.

Napier—2YH, May 11, 7.30 p.m., "Winter Feeding," by I. H. Owtram, Supervisor, Tairawhiti District Pig Council.

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Ryegrass Seed

Quality of 1943-44 Crop

THE number of samples of the new season's ryegrass seed which have been tested is now sufficient to form an impression of the quality of the crop as a whole, reports the Seed Testing Station, Palmerston North. The results of germination tests on samples of field-dressed ryegrass seed received during the months of January and February, are summarised in the accompanying table.

The crop just harvested is one of the best that has been recorded. Over all, three out of every four samples have a germination of 90 per cent. or better. The average germination of samples from each of the main seed producing districts, with the exception of Poverty Bay, is higher than the corresponding figures for the two preceding years.

SUMMARY OF RESULTS OF GERMINATION TESTS ON SAMPLES OF FIELD-DRESSED RYEGRASS SEED RECEIVED DURING THE FIRST 8 WEEKS OF THE CURRENT YEAR.

District of Origin.	Number of Samples Tested.	Average Percentage Germination.	Numbers of Samples falling within specified Limits of Percentage Germination. 0-49.	50-59.	60-69.	70-79.	80-89.	90-100.
Poverty Bay	29	81	1	1	1	5	12	9
Hawke's Bay	57	95	—	—	—	1	2	54
Manawatu	22	89	—	—	1	2	2	17
Nelson and Marlborough	8	84	1	—	—	—	1	6
North Canterbury	21	91	—	—	—	1	4	16
Christchurch	135	93	—	3	—	4	9	119
Mid-Canterbury	51	91	—	—	1	2	10	38
South Canterbury	41	90	—	1	—	1	9	30
Otago	49	84	2	4	2	5	7	29
Southland	21	79	1	2	—	5	7	6
All districts	434	90	5	11	5	26	63	324

It is probably correct to attribute the high quality of the seed to the dry weather experienced during the early summer months. This checked the spread of the "blind-seed" disease and enabled the seed to be harvested in excellent condition.

Sheep Dip as a Wood Preservative

"WILLIAM," (Martinborough):—

"I have split some willow posts and intended using sheep dip as a preservative, but have been advised that this would make them dangerous to handle."

The State Forest Service and Livestock Division advise as follows:—The use of sheep dip as a preservative for wood cannot be recommended. For the preservation of posts, creosote is recommended. If an arsenical dip, or a dip composed of arsenic and carbolic, were used it is quite possible that anyone handling posts treated with these preparations would be subject to the caustic action of arsenic on the skin.

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Veterinary Notes for the Farmer

Blackleg in Sheep

OUTBREAKS of blackleg in sheep have increased in recent years. It is difficult to say whether this is due to the spread of the disease or to the fact that the sheep-farmers, by reporting stock losses more frequently, have given more numerous opportunities to diagnose the disease. Reid (1923) stated that the disease was then unknown in sheep in New Zealand, but today it is well recognised, and although it is seldom large numbers are affected at a time, losses over a period of years can be serious.

Blackleg is a disease of cattle and sheep caused by a specific organism *Clostridium chauvoei.* In cattle the disease affects essentially young stock, is seen chiefly in late spring and early summer, and is confined to Taranaki, the Waikato, and North Auckland.

In sheep the disease is much more widespread, may affect sheep of all ages, but principally young stock, and is generally associated with seasonal operations such as shearing, dipping, marking, and lambing. Occasionally, outbreaks occur spontaneously in hoggets, these being comparable to the outbreaks in cattle.

Methods of Inspection

Cases of infection in sheep are generally associated with wounds—shear-cuts, dog-bites, etc. Two theories exist regarding the method of infection.

1. The specific germ is picked up from the soil and gains entrance through the skin wound.

2. The germ is already present in the bloodstream, the wound causes a lowering of the bodily resistance, and a lesion is set up at the site of the wound.

The distribution of the germ in the soil may be very unequal. This inequality of distribution may be seen on adjoining farms or even adjoining paddocks, one being infected and the other free. The disease is more prevalent on uncultivated land, on hilly country with marshy valleys, or on flats which are liable to be waterlogged.

The causal organism is chiefly a tissue parasite, being principally confined to the lesions.

Course of Disease

The disease is highly fatal, very few affected animals recovering. The course of the disease is rapid, death taking place about 48 hours after infection. Symptoms may not be observed, the animal being found dead in the paddock. Where symptoms are observed the following may be noted, stiffness of a limb, dullness, loss of appetite, the animal isolates itself. The animal has a dejected appearance and there may be muscular tremors. Pulse and respiration are accelerated. Temperature is very high with a sudden drop before death. The animal goes down and may lie in a comatose condition before death takes place.

Post-mortem Appearance

Post-mortem decomposition sets in rapidly. The carcass becomes blown and discoloured quickly. If infection has taken place at shearing or marking time the lesion is found around a wound; after dipping, dog-bites are generally the seat of the disease. When infection takes place after parturition the lesions are generally rather more extensive, affecting the region of the tail and the inside and outside of the thighs.

The affected area is swollen and discoloured and the wool pulls out readily. A blood-stained fluid may ooze from the part. The swelling may crackle under the fingers when pressed, due to the presence of gas under the skin. When cut the affected muscles have a darkened appearance and contain gas and blood-stained fluid.

Diagnosis

Diagnosis is made by laboratory examination of muscle tissue from an affected animal taken as soon as possible after death, since putrefactive organisms soon enter the body and mask the diagnosis. When sudden deaths occur in sheep after seasonal operations, blackleg should be suspected and the mortality reported to the nearest Veterinarian or Inspector of Stock, Department of Agriculture.

The disease may be confused with anthrax, which is practically unknown in New Zealand, tetanus, malignant oedema, or blood poisoning. History of the mortality and post-mortem examination supported by laboratory examination enable the trained observer to differentiate the disease from

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Moreover, PHENZEEN can be used for all kinds of stock with equal effectiveness.

In drenching sheep, however, owing to its relatively high cost, PHENZEEN should be used only for special purposes such as the "tail" of the flock, stud sheep, or for fat lambs on heavily worm-infested country.

For General Flock drenching use GIESEN'S Carbon Tetrachloride or SUTTON'S Nicotine Bluestone Cobalt.

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others. A recent outbreak was complicated by sheep and lambs dying in the same paddock from Enterotoxaemia (pulpy kidney).

Prevention

Since the disease is rapidly fatal, no treatment can be applied. There are several preventive measures which are of value in reducing losses. Vaccination, where warranted, is carried out free of charge by the Department of Agriculture. This is very reliable but it must be remembered that when vaccination is carried out during an outbreak, some animals may be affected at the time and will die in spite of vaccination. Such deaths cannot be charged against the efficiency of the vaccine.

Losses at shearing and dipping time can be reduced by thorough cleanliness around the shed and yards. If losses are greater on one paddock than others this paddock if ploughable should be cultivated for several years or grazed by adult cattle.

The biting dog, useful at times, is costly if blackleg occurs on the farm. Careful destruction of carcasses by burning or deep burial is essential in reducing the incidence of the disease.

Summary

Blackleg in sheep may be a constant source of loss on sheep farms in New Zealand. The disease can be readily diagnosed if reported in time. Although treatment is useless owing to the rapidly fatal course of the disease, preventive measures, properly applied, can considerably reduce the incidence of the disease.

—R. P. GILDER, B.V.Sc.,
Veterinarian
Palmerston North.

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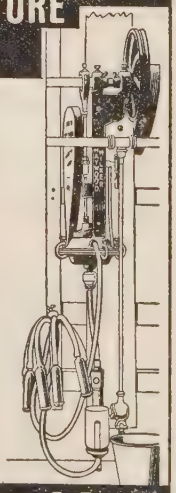

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Tumour on Pony's Ear

"A.B.," Okaihau:—Can you tell me what can be done for a lump which has formed gradually in size on the neck of a pony, just behind the ear. It is not in any way tender when pressed and is quite hard.

Livestock Division:—The lump at the back of the ear of your pony is a tumour of some kind. It is probably of the nature of a fibrotic tumour, hence its hard nature. These tumours are slow growing and are generally of a malign nature, but on the other hand the growth may be due to infection with the organism known as Botryomyces equi. Here again the tumour is a slow-growing one, and may take up to four years before its size will interfere with the usefulness of the animal. These tumours are mainly confined to the skin and adjacent tissues.

If the pony is young and the growth continues to increase in size, you should seriously consider having it removed by a veterinary surgeon. Surgical treatment is necessary in all cases of this nature, and local applications are of very little use. Until such time as an operation may be arranged, if considered applicable to this case, it is suggested that the growth should not be interfered with in any way. Blisters and liniments are not likely to prove successful in a growth of the nature described.

How Tripe is Prepared

"M.B," Tuakau:—Please supply information regarding the preparation of tripe.

Livestock Division:—Tripe is prepared from the first two compartments of the stomach of cattle. In making this product it is important that the stomach be cleaned as soon as possible after slaughtering. Unless this is done, discoloration takes place, impairing the commercial value of the product. The tripe is taken out and scraped and brushed in cold running water. Hand-brushing, using a stiff-bristled brush, is quite effective, when small quantities are to be dealt with; otherwise machines and hose are used to brush and clean the stomach. A small amount of lime or washing soda is used in the water when washing to remove the foreign matter and bleach the tripe. All fatty portions are removed, as only the muscular part of the stomach is used as tripe.

After the stomach has been cleaned, it is scalded in water at a temperature of about 130-140 degrees F. The pieces are kept in motion so that the water comes in contact with the entire surface. After immersing in the water for a short time, the inner lining of the stomach can be easily removed.

After preparing in this manner, the tripe is put into pots and boiled for about three hours, or until tender. After thoroughly chilling, if the tripe is to be pickled, it is put into a weak solution of vinegar for about 15 hours, after which full-strength vinegar is added.

It should be stored in a room at a temperature of 45 to 50 degrees F.

Dog With Eczema

"L.F.C.," Petone.

I have a female Scottish terrier 6 years old, who has a skin irritation. She scratches a lot and has bare patches here and there. I feed her cooked meat each morning and dog biscuits at night and raw meat once a week. I would be very grateful if you could help me.

LIVESTOCK DIVISION:—

The trouble appears to be a form of eczema to which this breed is rather susceptible. From the information supplied, it would appear that you are feeding the bitch too well on a diet of too much meat. Actually the dog is receiving too much protein. Once a day is quite sufficient to feed a six-year-old dog. Instead of giving cooked meat, a mixed diet should be fed.

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RED DRAUGHT

After calving, Osmond's Antiseptic Pessaries disinfect the calf-bed and passage and prepare the cow for the next calving. Regularly use Osmond's

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Although the diet should contain some meat, for the purpose of cure of the eczema it is necessary to make a complete change in the diet, reducing the meat to the lowest possible amount. Rice, cereals, bread and milk, potatoes or other vegetables, with plenty of water to drink, and bones with probably a little meat on them, should replace the present diet for three or four weeks, until some improvement is shown. During the warm period of the year too much meat is harmful even to the dog.

To relieve the skin irritation a bath twice weekly in a watery solution of liver of sulphur is suggested. Use about a teaspoonful of liver of sulphur dissolved in a large tub of water, and thoroughly wash the dog twice weekly. It must be stressed, however, that local applications are not satisfactory in themselves, unless a radical change is also effected in the diet. As the colder weather approaches, the dog may again be brought back to the meat and bone diet, but once a day feeding should be quite sufficient.

Swelling on Horse's Forehead

"A.M.J." (PAPOROA):—

I have a working horse with a soft lump on her forehead the shape of an egg. It comes up in the warm weather and in the winter time it gets very small. Would it harm the horse if I lanced it with a sharp knife or is there another way I could get rid of it?

LIVESTOCK DIVISION:—

Without knowing the exact location of the swelling on the horse's forehead, and presuming there is no inflammation and no interference with the horse's usefulness, it is strongly suggested that the swelling be left unopened. It is possible that after the swelling has been opened a chronic permanent discharging fistula will remain, much depending on the nature of the swelling and its exact position.

In all the circumstances it is advisable to leave the swelling unless you are in a position to get a veterinary opinion on the nature of it.

Ewe's Twenty Lambs

NO ONE could say that a certain ewe on the Fraser Estate, Bulls, has not done well by her country. In 12 years she has presented her owners with no fewer than 20 lambs. The ewe was born in 1931, and, in successive years since 1932 the lambs have arrived regularly—on five occasions, singly; on six, in pairs; and, finally, in 1943, as triplets. The three latest arrivals were healthy lambs, but two of them met with accidents, and died.

This ewe at ease in the cow-paddock may well rest content and proud of her youngest lamb. It is one of 20 that she has borne in 12 years.

For the past five years the ewe has lived in the cow-paddock of the estate, not at all in a sort of honoured retirement, but merely because, for all these years, she has not had a tooth in her head.

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Winter Feeding of Dairy Stock

THE winter marks the end of the production season and the beginning of the next. Production in 1944/45 season will depend very largely on how the dairy herd is fed during the coming winter and the farmer should now weigh in his own mind the prospects on his own farm in this respect. A survey of the Dairy Industry in New Zealand by Mr. W. M. Hamilton shows how dairy production in any one season depends on the amount of supplementary fodder provided in the previous winter. The accompanying graph shows butterfat production in relation to the acreage saved for hay and silage in the previous season. It will be noted that production in all seasons is high following the conservation of large acreages of hay and silage in the previous season and vice versa. Semi-starvation of animals in winter is yet all too common on farms throughout New Zealand, and the appearance of many herds of cows in the late winter and early spring shows that there is room for considerable improvement in the maintenance of our stock in winter.

Feed From Pastures

In winter pasture growth is extremely slow and at its lowest ebb of production. Yet any increase in the winter growth of grass is very valuable because such an increase can save equivalent labour in hand feeding, besides providing a better balanced diet for stock. In milder climates now is the time to shut up fields of rich pasture containing a high percentage of ryegrass to save growth for feeding the early calving cows as soon as they come into profit. (If the fields are shut up in rotation, some a week or two earlier and some later than at present, a greater spread of winter growth will be obtained).

Such pastures will produce more winter feed if they have been top-dressed with quick-acting phosphates in the early autumn. If a supply of a quick-acting nitrogenous fertilizer is available an application to such pastures of about 1 cwt. per acre before frosts are frequent or severe will increase their winter growth. Nitrogenous applications are more usefully applied to the fields closed up from stock last of all to make more certain of securing a growth of grass. The earlier closed fields will usually produce this without the use of nitrogenous fertilizers. The growth from saved grass is valuable for its milk producing and healthgiving properties, and should be carefully rationed to the milking cows and fed in addition to hay and coarser fodders supplied for maintenance purposes. In cold climates earlier closing will be necessary, and the saving of the autumn growth may have limited use because severe frosts may destroy much of its feeding value.

New Pastures

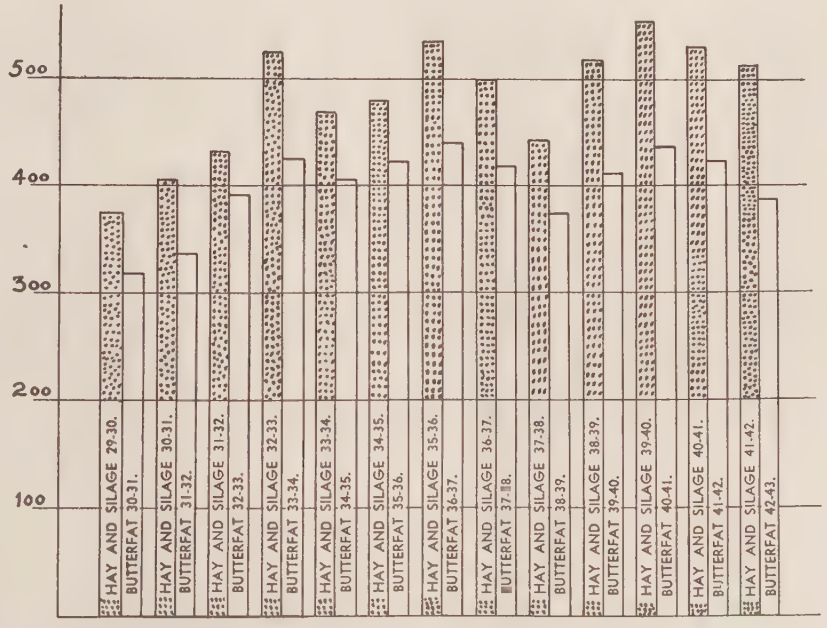
New pastures, if sown early and well established before the winter sets in, will produce more winter growth than old pastures, particularly if the sowings contained some Italian ryegrass as well as perennial ryegrass. They can be shut one or two weeks later than the older pastures to produce still later feed of high quality to follow the cleaning up of the growth from the older pastures.

Italian ryegrass sown in February or March for production of winter and early spring feed can be utilized in the same manner. Sown now it will not produce much fodder until the spring. Italian ryegrass is exploited to the greatest extent in the South Island where it is used for the same purpose as cereal feeds.

Hay and Silage Feeding

A cow on winter pasturage requires either 20 lb. of good quality hay, or 14 lb. of good hay plus 30 to 50 lb. of silage. In most districts hay feeding to young dairy stock should commence this month for it is essential that they should become accustomed to the supplementary fodder before they are forced to live entirely on it. Hay feeding to mature cattle should commence two or three weeks later to ensure that they also enter the winter in good condition. If cattle enter the winter in poor condition they cannot be built up on the coarse fodders available then, but if they enter the winter in good condition they can be easily maintained on them. Dairy cows should receive their hay ration in the morning, soon after the morning milking, and before the silage or supplementary roots are eaten. Where succulent feed of these kinds is not available it is very important to see that stock can obtain plenty of drinking water.

Hay of good quality is highly digestible and nutritious; poorly saved hay, on the other hand, has a low food value and is liable to cause digestive troubles. The farmer who has a large supply of poor quality hay and little or no succulent fodder such as saved autumn grass, silage, green feed or roots will be in a most unfortunate position. Fortunately, in many dis-



Hay and silage in thousands of acres. Butterfat in millions of pounds.

tricts, it is not too late to remedy this position.

Cereal Greenfeeds

I have already stated that farmers in the unfortunate position of having a prospective lack of succulent winter feed may yet remedy the position. Except in the colder climates it is late, but yet not too late, to sow a few acres of oats to produce later winter feed. The oats should be sown at 2½ to 3 bushels per acre. On some dairy farms the green feed is not grazed but allowed to grow long and then cut and carted to the stock. Under this practice little or no further growth will follow. Because of the danger from rust and better recovery from grazing, Algerian oats are usually sown. Autumn sown cereal greenfeed crops serve fairly efficiently as a badly required milk producing food in July, August and September. Where old pasture land is being broken in for production, a very suitable first crop for winter greenfeed is autumn sown oats on account of the lesser demand this crop makes on a fine tilth. The greenfeed oats can then be followed by swedes followed by permanent pasture.

Root Crops

Although in the milder climates pastures can be utilized so that there is little need to supplement them with special crops, in the colder areas the wintering of stock is very largely dependent on fodder crops. Roots are the most important of these, particularly in the moister climates, because of their high yield and cheap production. Roots have been described as watery concentrates, for although they contain about 90 per cent. of water the solids are digestible and nutritious. Containing such a large amount of water they are ideally suited to balance any dry fodder in the ration and hence are commonly fed with hay. The rate fed varies according to the nutritive value. With a basic ration of 14 lb. of good hay, about 40 lb. of carrots, 50 lb. of swedes, 60 lb. of mangolds or 80 lb. of soft turnips should be fed to maintain and build up the dairy cow in winter.

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To reduce wastage all root crops should be pulled and carted for feeding to the cows on a dry field of grass. They should be well scattered and not tipped in heaps. If this cannot be done the crop should be fed in breaks. Chou moellier should also be cut and carted to the cows if waste is to be avoided. Where frosts are severe cattle should not be allowed access to root crops before the frost thaws. This is particularly important when feeding dairy cows in calf, since neglect of care in this respect may lead to calving troubles.

Shelter

In maintaining the condition of stock adequate shelter is of great importance. Its presence increases the growth of pastures and crops, particularly in the colder periods, and at the same time decreases the amount of winter feed required to maintain stock. It decreases the mortality in young stock occasioned by cold spells of weather. Dairy cows should be rugged in the colder months to keep up the body warmth. Animals will not thrive in winter unless they are kept warm and fed well.

General

Despite the improvement of late years there is still room for better feeding and care of stock kept through the winter. Better attention in this respect will eliminate many of the ailments affecting our stock, and will repay high returns for the expenditure in shelter belts and the provision of feed for the winter months.

The following points regarding the wintering of stock should be kept in mind:—

1. See that stock enter the winter in good condition. It is not difficult to maintain stock in good condition in winter, but it is difficult to improve the condition of poor stock.

2. Autumn topdressing increases the winter growth of grass.

3. Start feeding out before grass growth stops and save the grass growth for later feeding so that a better balanced ration can be obtained, particularly for the early calving cows as they come into profit.

Potato Lifting

THE time for digging potatoes in the main southern districts is arriving. It is unfortunate that the potato grower cannot follow his produce up to the time it is sold to the consumer. If he could he would realise the damage that results from the smallest of cuts or bruises which expose the potato flesh to disease organisms, particularly dry rot. The infection is accentuated when potatoes are shipped to the North Island or for export. The cutting and bruising take place almost entirely on the farm during digging, pitting and grading. All growers raising potatoes for late consumption or for seed should refer to the article "Digging, Pitting and Grading Seed Potatoes," prepared by Mr. C. C. Leitch, Instructor in Agriculture, Timaru. In this article, which appears in the Journal of Agriculture for May, 1937, Mr. Leitch shows that the main factors leading to damage during hand digging are:—

(a) Lumpy ground and weed growth; (b) Hard set ground; (c) Uneven spacing of seed tubers in planting.

With the mechanical diggers these factors also cause trouble but in addition the following cause damage to the potato:—

1. Uneven spacing of the rows resulting in one wheel of the digger running along the edge of a row and crushing the undug potatoes.

2. Digger not kept sufficiently deep so that some potatoes are sliced.

3. Bruising on the aprons, particularly on the second apron.

4. Digging immature crops resulting in skinning.

The factor causing most damage and most difficult to control is bruising on the aprons. In order to minimise this some growers put old car tubes inside the two sides of the digger, thus breaking the fall and throwing the tubers towards the centre of the second apron. To lessen bruising the agitating action of the aprons can be eliminated by replacement of the agitator roller by a plain roller. Where the earth is dry, and the potatoes free from dirt when they pass the first apron, the second one should be removed.

Care should also be exercised during picking up. A suggestion has been made that specially constructed buckets with false or sieve wire bottoms, the wire covered with rubber, should be used. The buckets when full should be carefully tipped into the bags and to save unnecessary handling it is better to pit the potatoes in the bag containers and not loose.

Mr. Leitch states that during pitting damage is caused by rough handling, insufficient protection from rain and frost, poor provision for ventilation, and too much dirt on the tubers.

The mechanical grader is the most prolific source of injury—the damage

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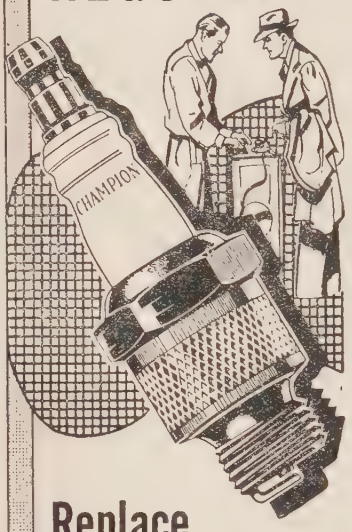

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being chiefly caused by the riddles. To prevent excessive damage the riddles should be kept full.

Improvement has been brought about by substituting rounded triangular wooden slats without cross-pieces for the corrugated wire in the riddles. Latterly, graders have come on the market, all parts of which might cause bruises being covered with rubber. These have proved most successful in reducing damage and their use is recommended.

Considering the amount of handling to which the potato is subject during digging, picking up, pitting, sorting and cartage, it is not surprising that damage does occur unless every care is exercised at each operation. It is also not surprising that lines of potatoes which appear sound at a cursory glance on leaving the farm, but which in reality contain many potatoes with small cuts and bruises, arrive at their destination with a high percentage of tubers infected with dry rot—a waste of a foodstuff badly required to feed our civilians and the armed forces.

Autumn Sown Oats

NOW is the time to sow oats for chaff or grain, particularly the slower growing varieties such as Algerian and Dun. These varieties withstand heavy grazing and will provide a bite of feed in the late winter and early spring. To prevent smut infection the seed should be dusted with organic mercuric materials prior to sowing. The seed should be drilled at 2 bushels per acre through all the coulters on a fairly fine and firm seed bed. Small lumps in the soil should be brought to the surface by use of the cultivator where they will do no harm and may prove of benefit in preventing the surface from caking. Large lumps are not desirable and should be brought to the surface by the cultivator and broken up by heavy harrows when the soil is in the right condition to do so.

Although the horse has been largely replaced by the tractor, the oat crop still remains one of our most important crops. Besides supplying grain and chaff for feeding horses and other farm animals, it produces grain for human consumption, and more important still, provides large areas of greenfeed for winter and early spring feed for sheep and dairy cows. It is to be expected therefore, despite mechanisation, the area of oats will need to be maintained.

In the milder climates, and in the North Island generally, the rust resistant Algerian oats should be sown, especially if the intention is to grow the crop for chaff or grain production. In such areas it is customary to sow 2½ to 3 bushels of seed oats per acre.

Pasture Harrowing

ESPECIALLY on account of the shortage of fertilizer every step should be taken to make the best use of animal manure. All pastures on which cattle or horses are concentrated will benefit from a thorough harrowing at the advent of the autumn rains, or, for that matter, whenever the droppings which have been undisturbed during any dry spell of weather have been sufficiently softened by rain to make the work of harrows in spreading an easy one. A chain harrow behind the grass harrows assists in the thorough distribution of the droppings. The harrow proper need only be of penetration and severity necessary to break up the droppings, and tear out rough ungrazed grass that usually grows around animal droppings.

—J. E. BELL,
Acting Land Utilisation Officer, Wellington.

PASSION FRUIT

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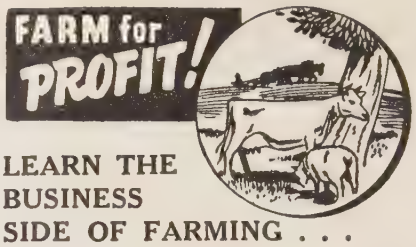

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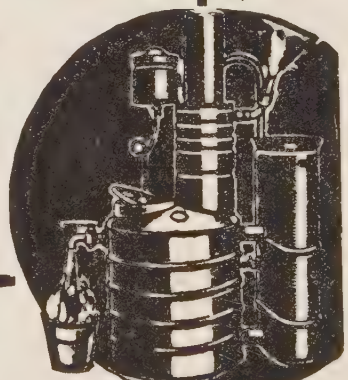

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Orchard Notes

Current Work for April

THE end of April should see the bulk of the crop harvested and disposed of, only a few late varieties remaining to be gathered. All fruit held in orchard storage should be periodically inspected and marketed before wilt or rot set in, and, above all, before maturity becomes too advanced for marketing.

With the close of the harvesting season and before the commencement of winter work, time should be devoted to a thorough clean-up of the orchard and its surroundings. Props should be gathered up and placed in a convenient place, where they will be in readiness if required for the following season. All fruit cases should be inspected, repaired if necessary, and stored away in a shed ready for future use. Remnants of crops, prunings, and diseased and decaying fruit should be gathered and destroyed. Cleanliness in the orchard is essential.

At this time of the year it behoves every grower to take a retrospective view of the past season's operations, while, at the same time, looking forward to the coming season. All spraying results should be examined. If there have been failures, investigation should be made to try and discover the reason. Where success has been achieved by the season's operations, it can never be taken for granted that the same programme can be followed in detail the following season with the same results.

Ploughing and Manuring

The orchard should be ploughed as early as possible after the fruit crop is gathered so that the work may be completed before the land becomes too wet. Where a green crop has been sown, and has not reached a sufficient height, it would be advisable to delay the ploughing in order to obtain the benefit of any additional growth the crop may make during the late autumn and early winter. The advantages of completing this work in the late autumn are several; the soil is exposed to the beneficial effects of winter frosts and rain; any green herbage turned under decays during the winter and so forms plant food, and the soil, through being turned up in a broken, loose condition, dries out more rapidly after rain, and does not remain in a water-logged condition.

To facilitate surface drainage the land should be ploughed with the fall and not across the slopes. Plough up to the trees, leaving an open furrow along the middle of the land between the rows.

Application of slow-acting phosphatic and potassic manures may be made during the autumn just prior to the ploughing of the land. Soils requiring lime may be top-dressed with approximately one ton of carbonate of lime per acre. The application of the quickly-acting nitrogenous manures may now be delayed until the spring.

Drainage

Good drainage is very important. The drainage of heavy retentive soils should not be neglected. Tile drains, though more expensive, give the best results and are the most convenient and permanent type of drain for the orchard. Existing open drains should be cleaned out and put in order, so as to allow the excess water to pass away freely from the orchard.

Preparation for Planting

Attention should be given to the preparation of land where extra plantings or replacements are needed. If not already cultivated, the land should be thoroughly worked up and made ready. Good, deep working is required, and no effort should be spared to put the soil in good working order before the trees are planted. After the trees are planted the land cannot be worked to the same advantage. Subsoil ploughing is highly recommended. Nothing is as beneficial as subsoiling, although growers are often disposed to avoid the additional expense, but, where time and conditions permit, it will do more to promote a fine, deep root system and an unusually heavy growth than any other thing that can be done in the preparation of the soil. Opinions differ in respect to the most favourable time to plant out trees. Some growers prefer the late autumn, while others favour spring planting. In general, autumn planting is suitable for dry, warm soils when properly-matured trees are available, whereas, in cold soils it is not advisable to plant the trees until early spring.

Shelter

In exposed situations the provision of adequate shelter should not be overlooked. A windbreak is essential if fruit trees are to be grown successfully; not only does shelter prevent the trees from being broken or blown over, but it also protects the leaves, which act as food-manufacturing organs of the trees, and should these become damaged they will not function efficiently. Where existing shelter trees have become too high, and are causing excessive shade detrimental to the growth of the trees, they should be topped to allow the trees to receive a reasonable amount of light and air.

—A. T. DOUGLAS,
Acting District Supervisor,
Horticulture Division, Auckland.

PULLING FOR VICTORY

Railways' Vital Role

As our war effort increases, miracles of movement are required of the railways—men, munitions and produce to be shifted in ever increasing quantities. Some of this extra transportation must be won through freighters making better and swifter use of railway wagons; some of it will come from an ever greater drive by railwaymen, some of it must come from civilian sacrifices. . . . New peaks are called for; they can and will be met. With the railways, war needs MUST come first.

The War Can't Wait

Harvesting Equipment

PICKING of fruit is a year-round operation on all citrus orchards where lemons are grown but, as with other work, there is always the peak period with which growers have to contend. Towards the end of winter, and through the months of spring until early summer, lemon trees will reach and pass their season of maximum yield, with the main crops of sweet oranges and New Zealand grapefruit coming and going during the same period. While the work of harvesting is still comparatively light, and before memories of last season's picking troubles fade into dimness, it may be well to check up on the equipment which will so soon be called upon to serve to its greatest capacity. Anything which can be done now to increase the efficiency of equipment, and thereby help to reduce avoidable periods of lost time for repairs, while work is at full pressure, will be a contribution towards easing the difficulties of wartime labour shortage. Safety and soundness of equipment to be used promote increased output without greater physical effort—an advantage felt by the grower as well as his helpers.

Orchard ladders may be in need of repairs after a few seasons of exposure to all weathers and constant use. A rickety ladder causes much irritation and loss of time, while it adds nothing to the efficiency or confidence of its user. Carrying straps, hooks and clips on picking bags may need repairs or replacements. Tightening up or sharpening of fruit clippers which have seen much service will be to their advantage.

Some of the more decrepit field boxes would be better for re-nailing or a new board here and there, while the worst of them could be sorted out and discarded. All field boxes, but particularly those in which, by chance, stored fruit may have decayed, should be dipped in or sprayed with a disinfectant. Formalin, 1-80, or a bluestone solution, can be used for this purpose, but the boxes should be dried before being used after treatment.

At least some of the enforced indoor hours, brought about by late autumn showery weather, might be earmarked for an overhaul of harvesting equipment.

Fungus Diseases

White Wax Scale: This pest is increasing rapidly in certain localities. Apply a summer oil spray at 3-100 strength during the last week of April for control of this scale. Earlier sprays are unlikely to be more than moderately effective.

Autumn Bordeaux Spray: The object of an autumn Bordeaux spray is to control fungous diseases, including verrucosis, wither-tip or melanose, grey scab, and citrus brown rot. Of these, verrucosis and brown rot are the best known, usually the most destructive in effects on fruit and, for these reasons, their depredations are regarded with the greatest concern by citrus growers.

Seasonal Work

Spray during last week in April for control of white wax scale.

Prepare for autumn Bordeaux spray towards end of May.

Check over picking boxes, etc., in preparation for peak harvesting season.

Verrucosis, present at all seasons, obvious in its effect on the appearance of lemons, commonest of citrus fungous diseases, has been dealt with in earlier notes and needs no further elaboration.

Brown Rot: Citrus brown rot, most prominent in late winter and early spring, influenced more by the vagaries of climatic conditions in any season, absent in some seasons or localities while possibly serious in others, is perhaps less universally distributed. Following a season of slight infection, especially should there be little evidence of verrucosis in the orchard, the necessity for an autumn Bordeaux spray for brown rot control may be questioned by growers. Citrus areas which have never shown signs of the disease may be reasonably safe, but it is most inadvisable to omit the autumn spray from the programme for orchards which suffer periodical "bad seasons."

The brown rot fungus, *Pythiacystis citrophthora*, propagates in the soil under moist conditions. From the soil the spores are carried to the fruits and foliage of the trees, where they develop to produce their characteristic damage. Twigs may be affected, showing browning of leaves and tips, which remain attached to the trees, and sometimes developing a little gumming at the point of division between healthy and diseased parts of the twigs. Fruits develop a greyish-brown spongy rot with a peculiarly pungent "rotten lemon" smell. Some measure of control is possible by keeping the top few inches of soil under the trees dry by constant cultivation, or by providing a blanketing cover crop to limit diffusion of spores. In affected orchards, foliage should be shortened to keep branches from contacting the soil.

A protecting Bordeaux spray, 3-4-50, should be put on about the end of May, or in June, with particular attention to thorough coverage of the lower parts of the trees. Brown rot affects all kinds of citrus fruits.

Withertip or Melanose: This disease is usually of less consequence than those mentioned above; nevertheless it may cause considerable fruit blemish or die-back of twigs. Much of the brown russet marking, especially on oranges and grapefruit, is caused by this fungus and could be reduced by autumn as well as spring Bordeaux spraying.

Grey Scab: This is another fungus trouble controlled by Bordeaux mixture. Its appearance in early stages can be confused with that of verrucosis or thrips injury. It shows up first as a silver-grey marking not usually as smooth as thrips injury. Later it becomes a rougher light grey scab, finally developing shallow cracked markings. It is seen frequently on lemons but is found more commonly on oranges and New Zealand grapefruit, possibly because these latter fruits receive less Bordeaux spray on account of their freedom from verrucosis.

These fungous diseases contribute towards loss of crop, or lowering of grade. An autumn Bordeaux spray thoroughly applied in the month of May will be of much assistance in reducing losses from relatively minor causes, as well as in controlling the major fungous diseases.

—I. L. NOTTAGE,
Orchard Instructor, Auckland.

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Guide for the Home Garden

Current Work for May

IN MOST home gardens it should be profitable during May to take a retrospective glance at what has been done during the past vegetable-growing season. A review can be made of the varieties which have been grown, and results compared with the production of past seasons. Kinds and quantities of fertilisers can be compared with those used in past seasons, and notes made as to their suitability for the respective crops to which they were applied.

Observations should also be made as to the condition of crops at present growing in the garden, particularly cabbage and silver beet. If these show healthy, vigorous growth of a rich, dark green colour, it will be safe to conclude that the soil is in a reasonably fertile condition. Weak growth, with an unhealthy foliage appearance, will indicate the need of increasing the fertility of the soil in which the crops are growing.

Green-Manuring

It invariably happens that the lack of organic matter in the soil is the principal cause of low fertility, and it would certainly be a mistake to continue using inorganic fertilisers for the production of vegetable crops if the cropping area is in this condition. Some points on green-manuring may be of more than passing interest.

"Green-manuring" means digging into the land any kind of green substance, whether it is weeds or a crop grown from seed sown, the main object being to increase the organic matter content of the soil. Other very important results are: More plant food is brought to the top layer of soil, light, sandy soils are bound more closely together, their texture improved and their water-holding capacity increased. Clay soils are made lighter, their drainage improved, and leaching of plant food is largely prevented.

Light soils will benefit more from a green-manure crop which is dug in when it is near maturity than when it is in a green, succulent condition. Green-manure crops should not, however, be dug into badly-drained or waterlogged land, and greater coverage is necessary on light land than on heavy types of soil.

Organic Fertilisers

While these may be classed as "safe" to use for almost all varieties of vegetables, this should not be taken to mean that they ought to be used without due consideration being given to the quantities which may be available for distribution. Some difficulty is being experienced in maintaining supplies of these fertilisers, and it is desirable that every means of economising in their use should be practised.

Composting all available and suitable disease-free garden refuse and crop remains is one of the best methods of adding to fertiliser supplies. It may also happen that on many vegetable gardens, particularly on those belonging to farms, animal and poultry manures could be utilised. If and when these can be obtained they should be stored in a rain-proof building and kept dry. Discretion must, however, be used when these are applied. Poultry manure will be found very forcing for certain vegetables, and fresh cow manure, when used on heavy clay soils, will have an undesirable binding effect.

Don'ts

Don't

Cut the top growth of asparagus until it turns brown. This colour indicates that the growing period is finished. It should then be cut to within 2 inches of the soil level, destroyed by burning, and the ashes broadcast over the bed.

Don't

Leave spent tomato vines in the garden to become overgrown with weeds. This is a practice which can only lead to the spread of disease in the soil. Treat them as recommended in the foregoing notes.

Don't

Consider that "any old thing" is good enough for the vegetable garden. Only the best seed, combined with the best attention, will produce the best vegetables, and the best is not too good for the family.

Don't

After working in the garden for an hour, say "Well, that's that for another week." This attitude will only bring results comparable with the interest displayed in the work being done.

Tomatoes

The remaining fruits can now be removed and stored where there will be every opportunity of them reaching the ripe stage. When this has been done no time should be lost in destroying the vines by burning. Digging the plants out is preferable to pulling them. and, as it is bad practice to leave them lying on the ground, they should, for preference, be hung over a fence. If not, and the part of the garden where they were grown is not occupied, each vine can be twisted round the stake to which it had previously been fastened. In this position the vines will soon dry, when they can easily be burned.

Rhubarb

During May rhubarb should receive particular attention. It is necessary to remove all weeds, withered leaves and stalks from the bed. The latter, if not diseased, and the weeds, if not perennial, may be placed in the compost heap. Well-rotted stable manure or farmyard manure, or dry fowl manure, or properly-made compost is good for this plant, and may be applied in very liberal quantities. In the absence of these, two handfuls of blood and bone manure can be distributed round each root, and lightly forked into the soil. When digging is being done round rhubarb roots, this must at all times be shallow. The feeding rootlets are near the surface, soft and very easily broken. Breaking these will seriously interfere with the crop prospects next spring.

Lettuce

In favourable localities seed may be sown for early planting of lettuce. This, however, is best done in a seedling box. During bad weather, either before or after germination, the box can be removed inside and the young plants protected. It is bad cultural practice and wasteful of seed at any time, but at this season of the year it is dangerous to the welfare of the seedlings to sow seeds thickly. During periods of high humidity lettuce seedlings are very subject to attacks of mildew which may destroy the whole of the young plants. A box 10 inches square by 2½ inches deep will grow more than sufficient plants for one sowing. Success or Webb's Wonderful are recommended varieties.

Cauliflower

Seeds of an early variety of cauliflower can also be sown in districts

where conditions are favourable for planting before late July. A box similar in size to that recommended for lettuce may be used, but greater depth, up to 5 or 6 inches, is desirable. This extra depth is necessary for the development of the tap root. To secure early cauliflower for household use requires skill and experience in production. Success depends primarily on the plants not being checked at any stage of their growth. Cauliflower plants are highly sensitive to adverse growing conditions, and this is too often the cause of premature seeding or "buttoning." It is better not to attempt to produce the plants if conditions are unsuitable; but to have cauliflower for use well before Christmas is worth an effort. Early London is a most suitable variety.

Spring Cabbage

The young plants of this early spring vegetable should be closely watched to see that growth proceeds favourably. Unfavourable weather is yet to be experienced, and the best attention should be given to keep them growing satisfactorily. Do not neglect regular applications of liquid manure. Drainage is of equal importance. If planting has been delayed, no time should be lost in setting out the young plants, and in low-lying areas, or where the soil is shallow, a raised bed is best. Outside leaves on which small yellow spots may have developed should be removed before the disease spreads.

Brussels Sprouts

In most districts where this vegetable is being grown picking will have started. The sprouts should always be cut, not broken off, and those at the bottom of the stem removed first. For the development of the sprouts higher up, treatment similar to that recommended for spring cabbages is necessary. In the absence of good liquid animal manure, nitrate of soda, 1 teaspoonful to a gallon of water, will be suitable. Some doubt appears to exist concerning the removal of the head of the plant. In Great Britain, where Brussels sprouts are grown to a greater extent than in the Dominion, the head is never removed until picking the sprouts is finished. Then it is sometimes cut and sold as cabbage greens.

Seed Potatoes

Home gardeners contemplating planting early potatoes would do well either to make enquiries towards the end of May or, if desirable, specially select seed from stocks which may be held. It is difficult to determine quality by merely examining the tubers. The proper time to select seed is when the crop is being dug. Unless this is done, buying from a reliable seed merchant may be the surest way of obtaining the necessary requirements. If choice is offered, tubers of a uniform size should be selected, and these may weigh approximately 5 to 6 per lb.

When the seed is obtained it should be placed in boxes 2½ to 3 inches deep with the "eyes," the "rose" end, up. If two boxes are necessary to hold the seed, it is advisable to have four corner pieces extending 3 inches above the level of the sides of one of them. This box with the corner extensions should be the bottom one, on top of which the second box is placed. If this plan is adopted, the boxes containing the seed can be stacked any reasonable height without damage to the sprouting shoots, and valuable floor space is saved. Wherever the seed is stored there should be plenty of light, good air circulation, and complete immunity from frost. Seed potatoes may be safely stored under trees where frosts do not penetrate.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

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Seasonal Work for Beekeepers

Honey Production

(Continued.)

THE most efficient and accurate method of cutting foundation to fit into sections is by the use of a mitre box constructed to cut the sheets of foundation into suitable sized lengths with as little waste as possible. It is advisable to use full sheets of foundation in the sections, allowing a quarter inch space at the bottoms for stretching. Where completed sections of honey have to be transported long distances, it is better to use a bottom starter as well as a full depth sheet leaving only the quarter inch space between the two pieces, thus ensuring that a firmly attached section of honey will result. The illustrations demonstrate the construction of the box. Figure 1 shows the box on the table with the saw cuts down and holding a number of sheets of foundation, of which up to 20 in number can be accommodated and cut comfortably. The cleated board is next put on top of the foundation (Figure 2) and the box reversed so as to rest on the cleats as in Figure 3. Figure 4 shows the box again reversed and the cleated board removed, exposing the foundation cut into accurate lengths.

The cutting can be done with either a sharp, long-bladed knife or a bread knife with a scalloped blade; the knife in the illustration is plain edged. The plain knife cuts better if dipped frequently in soapy water. Cutting is done at an angle, the knife being employed only lightly, but with a rapid sawing movement, cutting only on the back stroke. When using the corrugated blade of a bread knife, lubrication is unnecessary, unless the weather is very warm, when it is an advantage to dip the knife in cold water. This type of knife is held level and is drawn in only one direction, toward the cutter.

Attaching to Sections

Foundation should be placed in the sections with the rows of cells running horizontally. This is the way foundation is fitted into brood combs. The bees appear to take to it more readily, and sections completed on horizontal foundation have a more pleasing appearance than when the comb is built out on foundation with the cells running vertically. Care should be taken when folding the sections that the sharp edge of the "split" does not cut through the foundation. Sections that have been excessively dampened will swell and later contract, with the possibility that the foundation will fall out. When adjusting the foundation, and at all times when sections are handled, it is important that the hands be perfectly clean, as unsightly marks and stains on the sections may retard sales.

Spring Work

The particular system of working bees for the production of section honey to be explained in these articles is based on the methods advocated by W. E. Dunham, Specialist in Apiculture, Ohio State University, and tested out by the writer, who was entirely satisfied with the results achieved.

In localities where the main honey flow begins in late November or early December, beekeepers are faced by two problems, that of adding room as fast as required, and the control of swarming. This also applies, although to a lesser degree, where earlier flows occur, as from manuka. Some beekeepers producing section honey allow the bees the use of two full depth or one full depth and one half depth brood chamber throughout the season. The control of swarming is certainly an easier matter under these conditions, and where the crop is to be gathered from some relatively early source the queen would be better left with the use of two brood chambers. When, however, the crop is to be secured from the main flow which takes place some time later, and is usually of comparatively short duration, it is advisable to reduce hives to a single brood chamber at the beginning of the flow as it is necessary to restrict the laying of the queen in order to have a super of sections practically finished when more room is added. The bees can be compelled to do this only by having the brood nest crowded.

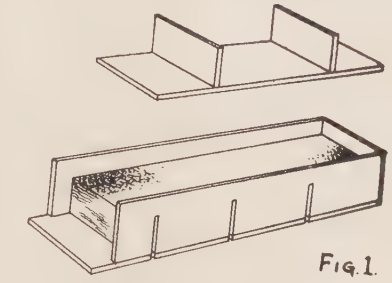

Fig. 1.

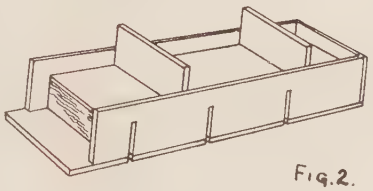

Fig. 2.

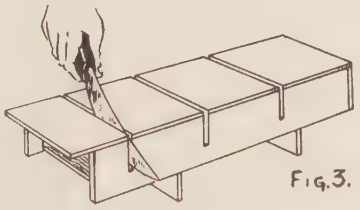

Fig. 3.

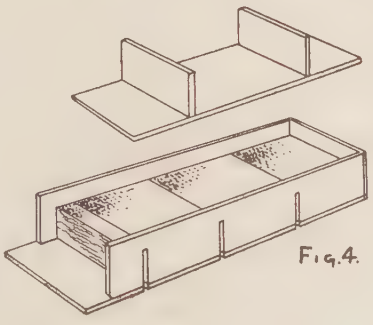

Fig. 4.

Disposal of Surplus Brood

When the hive is reduced to a single brood chamber, frames of sealed brood only are left as the brood will shortly emerge and allow the queen some room in which to lay. The surplus frames of brood may be given to weaker hives which would be more advantageously worked for extracted honey. Any frames of honey removed could be stored away to be later returned as winter stores. If, on the other hand, it is desired to make increase, a good opportunity is offered at this time. The second brood chamber with some of the bees can be placed on a bottom board with the entrances at an angle of 45 degrees from the entrance of the parent colony. The new hive can be allowed to raise its own queen or one can be introduced. After about three weeks the hive should be moved to a new position. The bees that drift back to the original location will enter the parent colony.

The use of queen excluders above single storey brood chambers is not necessary if conditions are right as the queen is not encouraged to enter the section supers which consist solely of foundation and are usually filled as rapidly as the foundation is drawn out. If, however, the colony is to remain in possession of both brood chambers, it is advisable to use queen excluders.

—R. S. WALSH,
Apiary Instructor, Auckland.

(To be continued.)

Poultry-keeping as a Source of Income

(Continued.)

IT WILL be appreciated that it is necessary to decide upon the system of management, when starting poultry-farming, before it is possible to plan in detail the lay-out of a farm. A decision in this respect is essential before a choice of housing and equipment can be made. Although the systems of poultry management in common use apply almost equally to young and adult stock, it will be convenient to discuss these systems as applied to laying stock in the first instance. Broadly speaking, these systems of management may be described under the following headings:—

1. **Free range system.**
2. **Semi-intensive system.**
3. **Intensive system.**

A description of the meaning of these terms must be given first.

1. By free range management is meant the maintenance of a flock of birds in housing set on grass paddocks, affording almost unrestricted range to the birds concerned. No formally constructed wire-netting runs are used, although boundary fencing may be necessary.

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— By —
F. C. BOBBY,
Superintendent of Poultry Husbandry, Wellington.

2. By semi-intensive management a flock of birds is kept in housing set within a limited area of ground. The term applies to any ordinary run surrounded by wire-netting and adjacent to suitable poultry housing. This system of management restricts the birds to an adequate but limited area of ground.

3. By intensive management is meant the confinement of birds to poultry housing without any run on the ground outside the housing. Modifications and combinations of these three systems are met with, but in essence the above-described systems cover the common methods of management met with in New Zealand.

Now to examine the advantages and limitations of these various systems:—

Free Range

Since this system normally allows a greater area of ground per bird than any other and consequently affords the most natural conditions for poultry, if properly handled a flock of birds under this system is given the best opportunity of maintaining health and constitution, and in general gives the maximum of protection against attacks of disease. As a system it is particularly suitable for growing stock, and could be used more extensively with advantage for mass-mated breeding flocks. Both these classes of stock benefit particularly from the natural conditions afforded by this system. There are, however, certain factors which tend to limit the use of this particular form of management. Comparatively large areas of ground are required. This may involve extra capital expenditure in the purchase of land at the outset, a factor of importance, particularly where a farm is established near a town or city, and where land values are high. Against this, however, may be set the fact that this additional land may well be a means of maintaining a healthy flock of birds of good constitution. A more difficult limitation to overcome today is the fact that free range management normally requires a greater amount of labour, since birds are spread over a greater area. Larger areas of grass require cropping, but this can usually be accomplished by the use of sheep or cattle. Difficulties of a practical nature may occur here, particularly at feeding time, but such difficulties are not insuperable.

The free range system is not in common use in New Zealand, except for the management of flocks of growing pullets. It is probable that the stock of the Dominion would receive considerable benefit if this system was more widely used, particularly for growing cockerels and pullets.

Semi-intensive

The semi-intensive system is the most popular method of management in New Zealand. Used properly it is a satisfactory system for laying stock, but improperly used it can lead to serious trouble. Although the number which may be run successfully per acre under this system will vary with the class of soil and according to

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whether the run is cultivated as grass or arable land, it may be taken as a guide that not more than 250 birds per acre should be run under a semi-intensive plan. Where, however, runs are too small for the capacity of the laying-house to which they are attached, these runs become heavily fouled and are a constant source of danger in regard to possible outbreaks of trouble, such as worm infestations and coccidiosis.

Many of the troubles which are too often associated with the use of fixed houses and runs limited in size can be avoided to a considerable extent by the use of double runs to each house, to be used alternatively as conditions demand. Worn and dirty areas around laying-houses and the possibility of outbreaks of disease may be lessened by this method of constructing runs. If semi-intensive management is applied to growing stock, then a greater number of birds per acre may be maintained, but only providing these runs are used solely for growing stock during the rearing season, and are spelled for the remainder of the year. Adult stock should not be used in runs primarily intended for raising growing stock, since adult stock often carry internal parasites (worms, coccidia, etc.) which, although not necessarily dangerous to adult stock, may easily infest the ground and subsequently endanger the growing birds put in the runs.

Intensive

This method of management requires the least area of ground, since the birds are confined throughout the year to their laying-houses. In the hands of an experienced poultry-farmer this system can be highly successful, and is one quite commonly practised in New Zealand. The birds on one of the largest commercial poultry-farms in New Zealand are run intensively from a day old until the completion of their productive life. Although a wholly artificial form of management, not only can it be made successful, but it is infinitely preferable to the semi-intensive system, where birds are given insufficient run space with consequent fouled and poultry-sick ground. Birds may be reared intensively and run similarly to laying stock, but on an average it is recommended that young growing stock be given free range before being brought into the laying-house.

Again, although breeding stock in the hands of the experienced poultry-farmer can be run successfully under wholly intensive conditions the general and wiser practice is to run such stock either semi-intensively or on free range. It is interesting to take note of a comparatively recent development of intensive methods where laying birds are kept in laying batteries composed of tiers of single bird-cages. This fresh development in methods of egg production has suffered a check owing to war conditions, but it would appear to be a system which will receive considerable attention when conditions return to normal, and the necessary material for these cages becomes available at an economic price.

To summarise, the intensive method can be highly successful in the hands of the experienced poultry-farmer, in particular for laying stock, but in general it is not to be recommended for growing and breeding stock.

It will be realised from what has already been written that any given farm may make use of one or all of these systems, as for instance free range for growing stock, semi-intensive for breeding stock, and intensive for laying birds.

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Federation of Young Farmers' Clubs

Meeting of Auckland Y.F.C. Council

A MEETING of the Auckland Y.F.C. Council was held at Auckland on Friday, February 25. It was a well-attended meeting, those present being Messrs. D. E. Wade (chairman), D. S. Ross (Immediate Past President, N.Z. Federation), P. Gow, R. Law, J. Cameron, W. Alexander, P. C. Clark, A. H. King, G. Mather, G. Spratt, W. P. Nichol, K. I'Anson, A. O. Lloyd, I. B. Vant, W. C. Riddell, A. S. Bell, G. Lane, G. A. Bell, J. H. Burgoyne, W. Hudson, F. S. Atcheson, C. S. Dalgleish, and P. S. Syme (honorary secretary); the Dominion Organising Secretary, Mr. S. Freeman, was present by invitation. Apologies were received from Messrs. E. B. Glanville, J. M. Smith, A. F. Walter, and W. G. Neill.

In welcoming the delegates the chairman expressed his appreciation of the number present and the representative nature of the meeting. Special reference was made to the presence of delegates from the Eastern Bay of Plenty district, all three being members of the Whakatane District High School club.

Resuscitation of Clubs.—Members considered that the resuscitation of clubs in recess was a problem of considerable importance, and that the time was now opportune to tackle it vigorously. The following committee of four members was appointed to endeavour to revive clubs in the Auckland Council area: Messrs. D. S. Ross, D. E. Wade, F. S. Atcheson, and K. I'Anson. As the particular work would involve a considerable amount of travelling, it was decided to allocate the sum of £50 for expenses.

Remits

Western Bay of Plenty:—"That members of the Y.F.C. movement who have been serving overseas and who will be over age on their return be given full status of membership for the equivalent time lost on service." Some members were of the opinion that it would be a mistake to raise the age limit in this manner, and that the clubs should cater mainly for the younger members. Mr. Alexander considered that the remit was tied up with an item on the agenda concerning group studies, organised by the Junior Chamber of Commerce, to include primary producers. Various members pointed out the danger of intervention by outside bodies, and suggested that although co-operation might sometimes be desirable and advisable it was a matter requiring very great care. It was finally proposed and carried "That having considered a remit from the Western Bay of Plenty wherein it is suggested that former members returning from overseas be given full status of membership for the equivalent time lost on service, this meeting submits the aforesaid resolution to the Dominion Executive Committee for consideration, and at the same time draws attention to the proposal outlined by the Auckland Junior Chamber of Commerce."

Western Bay of Plenty:—"That the system of stock-judging (dairy cattle) for inter-district, provincial, and national senior competitions be replaced by an advanced method whereby stock would be judged on the same system as that operating at A. and P. Shows." In discussion it was pointed out that the present system of judging had been recommended for the past four years, and that special forms were available for this purpose. The main reason for these cards being designed by the Federation was to ensure uniformity of judging standards, and little fault could be found with them. On being put to the meeting the remit was lost.

Address by Organising Secretary.—In addressing the meeting, Mr. Freeman congratulated the delegates on the relatively large attendance and on the optimistic spirit of the members present. The resuscitation of clubs in recess was a matter of very great importance all over the Dominion, and much good work had already been done in preparation for an autumn campaign. The various District High School clubs were an excellent recruiting ground, and the encouragement of membership from among men returning from overseas should also be given consideration. Fourteen clubs had been formed in a brigade serving in the Pacific, including one club of 140 members and another of 60 members. There were also clubs in Egypt and in camps in New Zealand. These members would prove very helpful to the movement and every effort should be made to hold the organisation together in order to be of value to them when they return from overseas. There were still about 70 clubs active in the Dominion (about one-third of the pre-war number). Mr. Freeman concluded his remarks by congratulating the clubs in the Auckland Province on the fine work being performed under difficult conditions, and emphasised the importance of holding regular meetings.

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Broadcast Sessions

The programme of radio broadcasts from 1YA was discussed, and it was resolved that the sessions be allocated as follows:—

March 27—Mr. T. E. Streeter (Dominion President).

April 24—Mr. W. Alexander (Auckland District Committee).

May 22—Mr. D. S. Ross (Immediate Past President, N.Z. Federation).

June 26—Western Bay of Plenty.

July 24—King Country.

August 28—Mr. S. Freeman (Dominion organising secretary).

September 25—Eastern Bay of Plenty (Whakatane D.H.S. Club).

October 23—Auckland (Clevedon Club).

Address by Mr. D. S. Ross.—Mr. Ross congratulated the Auckland Council on the excellent work which it had performed in holding the movement together in difficult times. Referring to the proposed resuscitation campaign, he considered that every member should do his utmost to assist the committee, and he was quite sure that if the aims and objects of the Y.F.C. movement, and all it had to offer, were properly explained, there would never be any lack of new recruits. He then referred to the need for increased primary production, stating that the Y.F.C. organisation was pledged to do its utmost in this direction. In concluding his remarks, Mr. Ross paid tribute to the work being carried out by overseas clubs; this he thought was an inspiration to clubs at home and an incentive for them to work harder. He was sure that the movement would keep going, and that in spite of present difficulties a bright future lay ahead.

Representation of Y.F.C. on Vocational Guidance Advisory Committee.—A letter was read from Mr. N. G. Gribble, Vocational Guidance Officer, inviting the appointment of a representative from the council to attend meetings and to act on the advisory committee. After a brief discussion it was agreed unanimously that Mr. W. Alexander be appointed to represent the Council.

Financial Statement.—This showed a credit balance of £377 1s 2d. Payments requiring approval amounted to £4 9s 10d. The statement was taken as read and the payments approved.

Allocation of Auckland Council Eastern Area Debating Cup.—After a short discussion it was decided to award the cup to the Te Puna Club.

Fuel Allocations for Meetings.—After discussion the following motion was carried: "That the Dominion Executive Committee take up the matter of an allocation of benzine to be used for district committee and executive committee work."

Expenses of Delegates.—Members referred to the expenses incurred by delegates in travelling to the council meetings, and considered that this was a material hardship on the district committees. The following motion was carried: "That half the expenses of delegates to meetings of this council from a distance of over 50 miles be paid by the council."

Scholarships and Bursaries.—Mr. Freeman raised the question of the appointment of a committee to consider the type of scholarships or bursaries suitable to members. A committee was set up consisting of Messrs. W. Alexander and F. S. Atcheson, with power to add—the committee to report at the annual meeting of the council.

It was agreed after discussion that the next meeting of the council would be held at Hamilton on May 24. The meeting then closed with a vote of thanks to the chair.

—*P. S. SYME, Hon. Secretary, Auckland Y.F.C. Council.*

Y.F.C. Memorial Sub-Committee

THE FIRST meeting of the Y.F.C. Memorial sub-committee was held at Auckland on February 25, 1944. The following officers were elected: Chairman, Mr. G. Spratt; vice-chairman, Mr. D. S. Ross; secretary, Mr. W. P. Nichol; trustees, Messrs. D. S. Ross and G. Spratt.

The sub-committee wishes to remind all clubs, district committees and councils that it will be very glad to receive suggestions and donations for a fitting memorial.

Reports on Club Activities

WESTERN SOUTHLAND.

Dipton.—At the opening of the meeting members stood in silence as a mark of respect to Pilot Officer George V. Helm and Private Murray Wilson, both of whom had made the supreme sacrifice since the last club meeting. Pilot Officer Helm resigned from the chairmanship of the club to go overseas; he also at one time held the position of club secretary. Private Wilson was the club reporter. Date of the annual meeting was fixed. Mr. W. King exhibited films on wheat, wool and superphosphate production; members of the Farmers' Union were asked to attend, and on their behalf Mr. Baird thanked the club for the invitation and for the interesting screening.

Orepuki.—One new member enrolled. Arrangements for a field day at Invercargill, where the members will make a tour of one of the wool stores. Capt. A. N. Murray, recently returned from the Middle East, gave an interesting talk on farming methods in several different countries. There was an attendance of 21 members. At the previous meeting a talk on "Sheep Diseases" was given by Mr. C. Aberdeen, veterinarian.

SOUTH OTAGO.

Warepa.—Annual meeting. Members stood in silence in memory of W. Ashman and H. Parsons, members who were recently killed on active service. Report and balance sheet read, the latter disclosing a credit balance of £1/11/6. Officers elected: Advisory President, Mr. E. Maitland; advisory members, Messrs. R. Agnew, E. Milligan and J. Dodds; club chairman, A. Hammond; secretary, E. Cook. It was decided to ask Mr. Hayhurst to demonstrate on colts early in March. Ten members present.

DUNEDIN.

West Taieri.—Members stood in silence as a tribute to the memory of J. Bathgate, a club member recently killed in action. Talk by Mr. C. Cameron entitled "Angling." Eight members present.

MANAWATU.

Rongotea.—Parents and friends evening to be arranged. Talk by Mr. Marsdon on "Pig Production." Ten members present.

WAIRARAPA.

Alfredton.—Annual meeting. Officers elected: Patron, Mr. A. A. Napier; advisory presidents, Messrs. D. M. Parsonson, J. M. Hull and J. L. Heckler; club chairman, W. Algie; vice-chairman, J. Hull; secretary, B. Napier; committee, C. Algie, W. Heckler, A. Heckler, B. Seymour and J. Hull; supper stewards, D. Napier, H. Nordlof and H. Dagg. A report was given by W. Heckler on the recent meeting of the Wairarapa District Committee held in Masterton. Arrangements made for the club's annual ball.

Carterton.—Talk by Dr. Gomez, veterinarian, on "The Maintenance of a Dairy Herd." Attendance of 22 members, and in adddition a number of local farmers. A club dance was held, and was a great success, as was also a combined picnic with the W.D.F.U. and the Farmers' Union.

SOUTHERN HAWKE'S BAY.

Dannevirke.—Twelve new members enrolled. Date of annual meeting fixed. General business included the matter of the club's centennial trees in the showgrounds, and a letter from a member overseas; both were held over to be dealt with at the annual meeting. Two-minute talks by B. Barker ("Collective Farming in Russia") and M. Carswell ("A Visit to the Ford Motor Factory before the War.") The speaker for the evening, Mr. K. J. Holyoake, M.P., gave an interesting and instructive talk on "Tobacco-growing in the Motueka District." Thirty-seven members present.

TE KUITI.

Paewhenua. — Annual meeting. Officers elected: Advisory President, Mr. P. D. Crowley; chairman, J. Mexted; vice-chairman, W. Pepperell; secretary, G. Morris; treasurer, G. Schultz; hon. auditor, Mr. Thos. Hastings. A discussion took place regarding the annual ball. Two new members were enrolled. There were 15 members present.

WAIKATO.

Tahuna.—One new member enrolled. Decided to purchase a set of boxing gloves. Arrangements for a sheep-dog trial as a field day in the near future. Members asked to draw designs for a new club flag. Club dance to be held, proceeds to go to the patriotic committee. Fifteen members were present.

BAY OF PLENTY.

Paengaroa.—One new member enrolled. Final arrangements made for the calf-judging competition. Following proposal to be forwarded to the "Y.F.C. Memorial Committee," together with a donation of 3 guineas: "That a trust fund be established to be used to educate sons of deceased members of the mercantile marine to officer rank in the merchant service." Talk on "Commercial Fishing in N.Z. Waters," by Mr. C. Mills. Twenty members present.

Tauranga. — Six new members enrolled. Arrangements for field day, and also for inter-club judging competitions. A social and dance held recently showed a profit of 15/-. Decided

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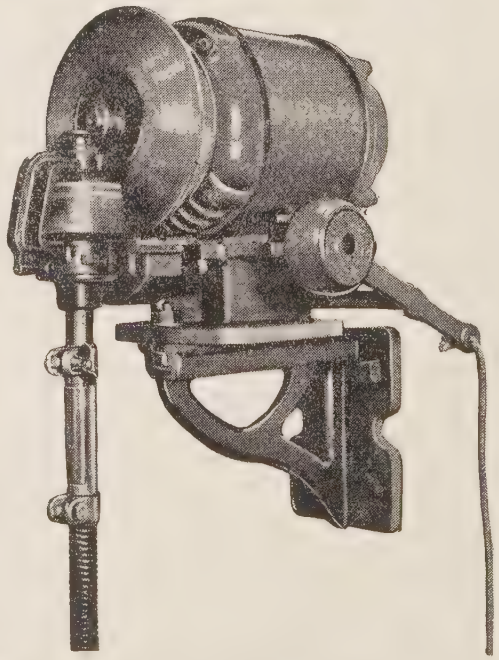

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to hold another dance shortly. A very interesting set of films was shown by Mr. F. Briggs; the films were taken on his trip to Australia, Java and Singapore in 1938. There was an attendance of 17 members at the meeting.

Te Puke.—Account of a very successful calf-rearing competition was given by P. Nichol, who also gave a report of the recent meeting of the Auckland council. A general discussion was held. Nine members present.

NORTH AUCKLAND.

Kaukapakapa. — Arrangements for a stock-judging competition at the Helensville A. &. P. show on March 4. Interesting talk by Mr. J. Rasmussen on "Types and Methods of Farming in Denmark." Twenty-eight members present.

Wairarapa District Y.F.C. Committee

A MEETING of the Wairarapa District Y.F.C. committee was held at Masterton on March 1. The following were present: Messrs. N. Blatchford (chairman), G. H. Perry, H. Bennett, A. James, H. McKenzie, W. Campin, J. Rose, D. McLachlan, W. Heckler, W. D. Buick and N. Lamont (District Y.F.C. secretary). Apologies were received from Messrs. W. F. McLaren, W. James, E. T. Bliss, J. L. Heckler and S. Freeman (Organising Secretary).

The meeting dealt mainly with the arrangements for a proposed field day. It was generally felt that judging competitions in conjunction with A. & P. shows were not a complete success and that every effort should be made to hold a special Y.F.C. day. It was decided that a field day be held, if possible, at Solway showgrounds, or failing this on Mr. L. T. Daniell's property, on Thursday, April 20. The following classes were suggested:—

Two judging classes only—Jersey cattle (rising 2-year-old), and four pens of four breeding ewes suitable for fat lamb production; these to be judged by three competitor classes—junior and senior Y.F.C. members, and land girls. The possibilities of a land girl dog-trial were to be investigated. It was also suggested that a demonstration on a Southdown ram for fat lamb production be included. Other items proposed for the field day were chain-stepping and weight-guessing competitions.

Catering arrangements were discussed, and provision made for a charge for refreshments. It was decided to ask the following to act as judges and demonstrators: Mr. C. Hay (dog trial), Mr. R. Wellington (Jerseys), and Mr. W. F. McLaren (sheep). Suggestions were also made for the obtaining of stock for the judging competitions and demonstrations.

It was decided that the next meeting of the district committee be held on April 5, and that the annual meeting be held on May 3.

Annual Meetings

THE attention of club secretaries and chairmen is drawn to the fact that the annual meetings of clubs should have been held during the month of March. It will be appreciated if reports of these meetings are forwarded to the **Organising Secretary, Y.F.C., P.O. Box 112, Palmerston North.** The reports should contain the full list of officers elected, number of members present, etc; copies of the clubs' annual reports and balance sheets will also be of interest. Secretaries are also requested to note that as soon as possible after their annual meetings it is necessary for tnem to send in to headquarters a revised list of their club's members; this is required for Journal subscription purposes, and also in order that a complete membership roll of the organisation can be kept. These lists should be addressed to the **Organising Secretary, Y.F.C., P.O. Box 3004, Wellington,** as they are attended to in the Wellington office.

The annual meetings of district committees should be held during the current month, and the annual meetings of the four councils during May. This arrangement is necessary to provide a continuity of annual meetings—first those of the clubs, then the district committees, and then the councils; this enables the delegates to be appointed in correct order, and any important business to be passed on from one body to another.

It appears unlikely at the present juncture that meetings of the Dominion Executive Committee will be held for some time, owing to the restrictions imposed on rail travel over 50 miles; the Railways Department is definitely refusing to grant permits to attend meetings or conferences of all organisations. An endeavour, however, will be made to hold meetings of the emergency committee.

Stock Judging Contest

The results of the Wairarapa Young Farmers' Club's stock judging contests held at the Carterton Show are as follows:—

Romneys—Senior: 1, P. Evans, Masterton; 2, A. E. Cave, Masterton; 3, D. Buick, Masterton; 4, A. Southey, Masterton.

Southdowns — Junior: 1, J. Priest, Masterton, 75 points; 2, W. Morrison, c/o. College, 70 points; 3, B. Loader, c/o. College, 65 points; 4, H. McMaster, c/o. College, 55 points.

Pigs—Junior: 1, W. Renall, c/o. College, 81 points; 2, T. Fell, c/o. Carterton Y.F.C., 77 points; 3, L. Heckler, c/o. College, 74 points; 4, W Morrison, c/o. College, 60 points.

Shorthorns—1, A. Heckler, Alfredton, 75 points; 2, B. A. Card, Carterton, 73 points; 3, J. Rose, Carterton, 65 points; 4, A. Southey, Carterton, 60 points.

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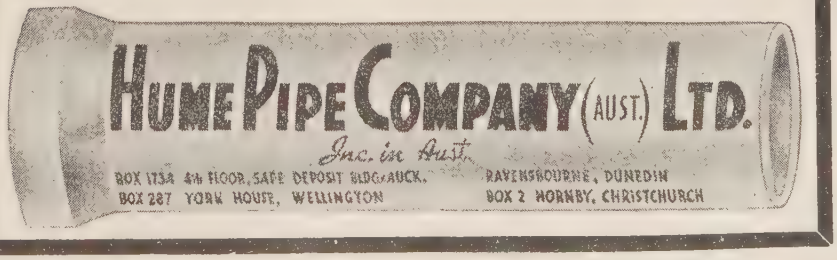
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Health Notes for the Farm

That Apple a Day

Contributed by
The Department of Health

LIKE many other popular catch phrases, that well known one about "an apple a day keeping the doctor away" is a somewhat loose statement but containing the grain of an important truth. One authority has remarked that if the doctor were kept away that easily, then the medical profession wouldn't have very much to do. And there's a lot in what he says, obviously. But at the same time, the humble little apple serves an extremely useful purpose, and the practice of eating an apple a day is sound common sense.

It's only since the beginning of this century that we've been able to take our various foods apart and look at them, and give those various parts their proper labels. Not much more than forty years ago we began to recognize in foods those elements we know to-day as proteins, carbohydrates, fats, minerals, and roughage.

Ten years later we started to find out things about the vitamins, and since then the study of nutrition has progressed by leaps and bounds. And this is where the apple comes in. It introduced a new aspect, and there has been a gradual elucidation of the reason why the apple has certain medicinal properties.

Curative Properties

On the continent of Europe, for instance, it has been the custom for more than a century to treat diarrhoea in infants by giving them grated raw apple. Naturally, this called for investigation, and it was discovered that the apple had a curative effect on upsets and infections of the alimentary tract.

This curative property is now being unravelled. As far as can be stated at the present stage of our knowledge, it is caused by a combination of the pectin, the acids, the sugars, and the traces of copper present in the apple. These things combine to remove the toxins produced by bacteria, and thus nullify the effect of those toxins. In addition to this, these substances collaborate in preventing bacteria from multiplying.

The result is that, in the apple, you have a two-way tonic effect. In the first place it has a laxative tendency, which is in fact the property by which it is best known; and, in the second place, it has an anti-diarrhoea action.

Most housewives know that the pectin is the substance responsible for the jellifying properties of apples. The pectin is present in the maximum amount just when the apple is hard-ripe, and it's freed from the apple pulp by the aid of the acids when it is cooked. Taking this a step further, it's logical that one should get more pectin by taking the juice of a large number of cooked apples, preferably those known to contain a large amount of pectin, like Dunn's Favourite. This has been borne out by test.

Method of Treatment

The suggestion is, therefore, that an attack of diarrhoea should be checked by washing and slicing six to eight apples (skins and cores may be included), then barely covering them with water, and cooking them for 15 minutes. When they are cool enough to handle, squeeze the juice through a jelly-bag. If the patient can manage to drink all this juice—in an unsweetened state — within about two hours, he may perhaps feel sufficiently better to resume normal meals. It's not a bad idea to preserve this apple extract by pasteurisation, just in case there are no apples handy when you need them.

Just a word of warning about the use of roughage. Roughage is essential to keep our digestive systems in a healthy condition, but don't make it too rough. The really rough stuff can become extremely irritating, and can cause damage to the intestines. And moreover, it can create the costive condition it is intended to cure. Daily fruit and vegetables are the most important sources of roughage.

When you cannot spare enough sugar to make the popular candied peel, try this substitute: Collect all your lemon and orange skins and dry them in the oven till quite stiff, then mince them very fine and store in an airtight jar, ready for your cake-baking.

* * *

If you are having difficulty in purchasing new rubber rings for your preserving jars, try dipping the old ones in ammonia. Of course, you will need to wait till the smell has disappeared before you start using the rings.

* * *

If you are troubled with flies, try cleaning your windows with the following mixture: 1 cup each of rainwater, kerosene and methylated spirits. Not only will this discourage the flies, but your glass surfaces will have a splendid polish.

THE GOOD NEIGHBOUR.

THE last few years Easter has held a greater significance for many of us and it is fitting that we should pause for a little while in our work to contemplate afresh the import of Calvary. Too often we have been content to regard Easter merely as a holiday and a welcome break in our routine, but now that war has pulled the scales of self-interest from our eyes and numberless homes are bereft of loved ones, the story of the Crucifixion has a new and deeper meaning.

We may well ask ourselves: are we proving worthy of that sacrifice, or have we let personal loss and disappointment dull our perceptions. lessening our loyalty to ideals we know to be true and fine, and rendering us oblivious to the needs of those around us? Are our lives so ordered that we can answer unflinchingly the query: "Can you now face life without fear, take the bitter with the sweet, the sorrow with the joy, black anguish and failure with the same gallant heart as you face triumph? Can you look life in the eyes and take her by the hand with all she shall bring you, even if the road she takes you on shall be sharp with stones and lead at last to the Cross and the Crown of Thorns?"

Christ Himself was ever mindful of others, even to the tiniest living thing needing His care:—

"I saw Him lift a stone
To help a flower not yet blown
To blossom in a kinder spot.
I saw Him raise a fallen bird,
I saw His hand reach to its nest
High in the boughs. The whole wood stirred
In humble love as with no word
He left it in their care to rest."

It is only through pain and suffering that we are led to a "completer humanity, a more piercing quality of vision."

For some it is "the hour of the angel who stands between light and darkness, testing every man, sending him forward to fresh experience or back to learn again. For those who may pass on, new life awaits, life more strange and yet familiar, more glorious and yet more homely, more individual and yet more corporate than any for which he had dared to hope."

And for those who remain and must take up their everyday life again minus so much of the old joy and companionship, I bring you these Easter thoughts to give you comfort and faith in the days to come:

"Grant us, Lord, the knowledge of true service in Thy sight;
Save us from blindness to our opportunities
Of bestowing upon others help and sympathy.
And if grim circumstance should force us to engage
In occupations uncongenial to our tastes,
Help us to serve cheerfully for Thy sake."

Mary

Easter

Lent

We wouldst know Thy way of perfect love—
Love that shields us from impurity of word or deed;
That shows compassion, and swift eagerness to serve;
Love that is fearless, strong, that mocks not truth or honour,
But burns throughout the ages—a flame of sacrificial fire.
As we kneel . . .
There comes to us a vision of the Risen Christ:
When we behold that radiant face, doubt's searchings cease.
Strengthened anew we rise to face Life's tasks again,
Thy love infinite, ours—and in our hearts Thy peace.

—Enid B. V. Saunders.

A Gift for Easter

IF you are in search of an Easter gift you could not do better than choose Lady Newall's Gift Book, with its extensive selection of prose and verse by New Zealand authors, illustrations by New Zealand artists, and printing and binding carried out by local craftsmen—the result being a distinctive addition to the literature of this country. Moreover, the proceeds from the sale of the book are for the Patriotic Fund.

To my mind, the gem of the collection is Alan Mulgan's whimsical account of "Our Village," wherein humour blends delightfully with a poet's deep appreciation of beauty in bird and bush and harbour. Johannes Andersen, Eric Ramsden, Guy H. Scholefield, and the late James Cowan are responsible for the wealth of interesting material relative to Maori folklore and tradition. Two of our foremost novelists have contributed stories with overseas settings; Nelle Scanlan, of Pencarrow fame, reviving memories of Coronation pageantry; and Ngaio Marsh (forsaking the "thriller" we have come to expect from her pen) describes a German anecdote. A particularly sincere piece of writing is John Pascoe's "Soldier from the Mountains"—a tribute to the young mountaineer, Wyn Barnett, who was killed in action in North Africa.

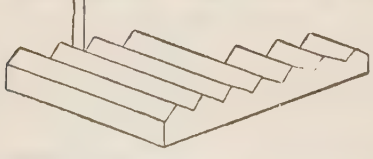
The standard of poetry is well maintained by such writers as Eileen Duggan, O. N. Gillespie, Arnold Wall, C. R. Allen, Ian Gordon, Jessie Mackay and Robin Hyde, while Paula Hanger ably represents the younger generation of Dominion poets. Illustrations include paintings by F. Goldie, J. C. Richmond, Russell Clark, John Gully and Airini Vane, while the black and white section contains cartoons by Low, Minhinnick, and A. S. Paterson, and reproductions of the art of W. Dittmer, Margaret Butler, Harry Rountree and Peter McIntyre.

"Your labor is for future hours"

Ye rigid ploughmen! Bear in mind
Your labour is for future hours.
Advance! Spare not! Nor look behind!
Plough deep and straight with all your powers!

And that is the duty of us all — to plough straight and deep with all our powers. To bring to every task in the fields, in the factory, or in the home, a strong determination to work for the happier world to come. To-day the Onehunga mills are sparing nothing in their efforts to weave for war, and that is why you may not be able to buy your requirements of Onehunga products. But the future hours will surely come when our labour reaps its own reward and the good things of life will return in plenty. Among those good things will be Onehunga Woollens, on active service again for the comfort of New Zealanders.

ONEHUNGA



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The Perfect Hostess

EASTERTIME is visiting time and the last opportunity for many folk to enjoy a brief holiday before the onslaught of winter. If, this year, it has fallen to your lot to play the role of hostess instead of the fortunate who seeks a change of scene you will naturally want to do all you can to make your guest's stay one that will occasion pleasant memories in the days to come.

THE art of being a good hostess is not difficult to learn. To my mind, it hinges on two things: ability for organisation, and attention to the small details that are so essential to a person's comfort and well-being. In considering the first point, the most important item is, of course, food. Do, I beg you, take time to plan your menus in advance so that you have the main commodities on hand and a list of the perishable ones to be purchased as needed. It will save you from anxious pondering: "What on earth can we have for lunch today?" or "If only I could think of something different for a pudding," to say nothing of the embarrassment of finding yourself short of an ingredient when you have chosen a recipe at random. Do not overload your guests with too many elaborate dishes—simple fare is best, served attractively and given additional interest by being cooked a different way or treated to a new flavouring. Complete as much basic cooking beforehand as possible, e.g., stock for soup, fruit puree and pastry for desserts, biscuits or fruit cake, etc., so as to cut down the hours you spend in the kitchen later on. The same advice applies to housework—get ahead with those extra jobs, if possible; then reduce your activities to the minimum conducive to efficiency and have leisure to enjoy the company of your guests.

Arrange for various jaunts and festivities, by all means, but do not be disappointed if you do not fulfil all your programme. She may be tired and prefer to read or rest rather than to sally forth. She may have other friends she wishes to see while in the vicinity. There is nothing more trying to a guest than a hostess, no matter how well-intentioned, who will insist on filling up every minute of her stay with entertainment. After all, the very essence of a holiday is freedom to relax and do as one pleases. And another thing—no visitor likes to feel that her advent is the cause of inconvenience to the household, so that if you have a previous engagement, even though it does not include your friend, go ahead and keep it; or if a domestic contretemps should occur, keep cool and deal with it with the least possible fuss.

Now for the second point—thoughtfulness in little things. When you have made the bed and cleaned the spare room, do you turn on the light to see if it is of a suitable candle-power to read by, and do you look over your assortment of bedside literature and remove those tattered magazines and old-fashioned school prizes and add something more suited to the new occupant's taste? (A nervous person will hardly appreciate the latest thriller as a forerunner of peaceful sleep, and it is no good wasting your choicest selection of poetry on the non-imaginative individual who insists that all things are better said in prose.) Have you kept sachets among the contents of your linen cupboard so that sheets and towels are lavender-scented; have you put a supply of coat-hangers in the wardrobe and left an extra blanket and pillow handy in case they are required? Is there in evidence that most welcoming touch of all—flowers from your garden? Remember to add them to the breakfast tray when you are setting it; a tiny posy is one of the nicest ways of conveying your morning greeting to a guest. Let your hospitality extend to making her free of such facilities as an iron for pressing, writing and shoe-cleaning materials, a needle and cotton to mend that unexpected tear. And never grudge any trouble you go to in order to obtain accurate information regarding mails and time-tables.

You may not win fame for your beauty or brilliance of intellect, but if you follow out the foregoing advice you can well lay claim to the distinction of being a perfect hostess.

The Perfect Hostess

She greets you with a gracious word,
She never does a thing absurd;
She likes to hear what you may say,
And does not over plan the day.
She serves the food that you like best,
And gives you ample time for rest.
She does not gossip or complain,
And hasn't any selfish strain.
She does not argue or insist,
But aims your best self to enlist.
She gleans how long you wish to stay,
Then lets you go without delay.

Faith

Oh, cheerily smile
And wait awhile
For the storm will soon be over.
There is a hint of blue
In the sky for you,
There's sweetness yet in the clover.
Oh—rest and wait
Though a burden great
On thy heavy heart is pressing,
For a hand of love
Will the cross remove
And leave instead
A BLESSING.

From *Roundabout, K.C.*

The Night Christ Died

The flowers were sad and very still
The night Christ died upon the hill.
Each lily drooped its lovely head . . .
They did not want to see Christ dead.
Only the clover turned about
And wove green fingers in and out
About the cross. Christ did not see
The clover's little sympathy.
But God looked down, and on each leaf
He marked a tiny sign of grief . . .
A little, poignant drop of red.

"IN MEMORY OF MY SON," God said.

—Betty Maitland.

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Necessary wartime measures may have changed your pattern of living, particularly your shopping and eating habits. For some foods are rationed. Others not always easy to get. Besides, store deliveries have been curtailed. Shopping trips are fewer.

Even so, your refrigerator can help make meal-planning easier — if it is used properly.

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Do you know what can safely be kept outside of your refrigerator; what must go in? WARTIME SUGGESTIONS tells you.

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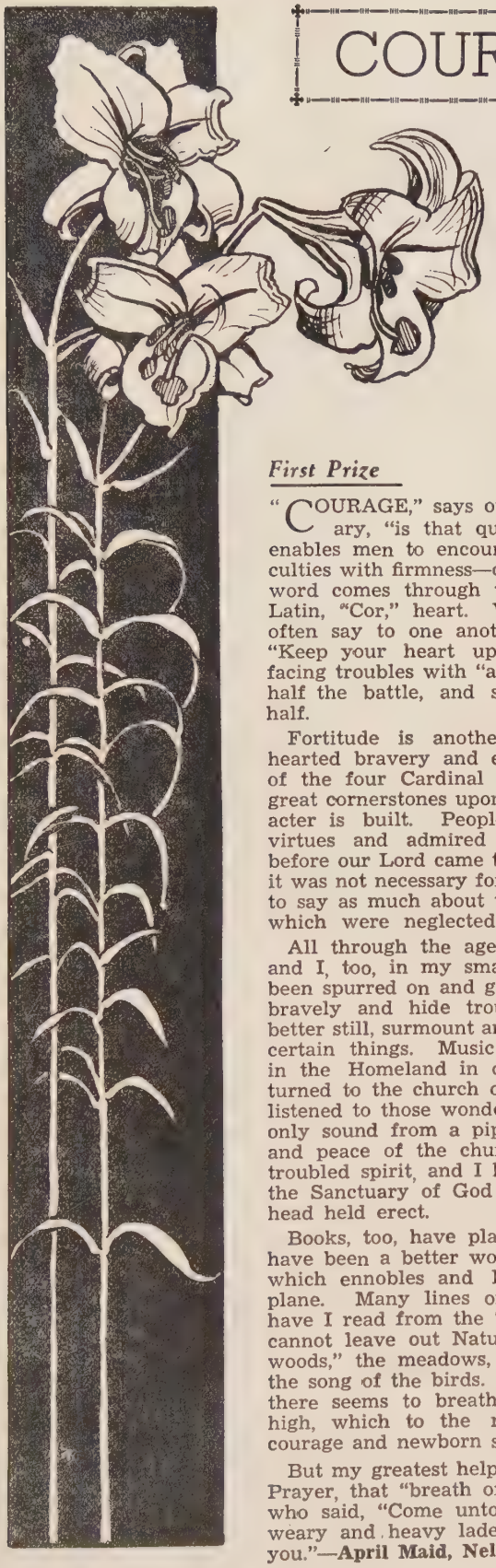


COURAGE TO CARRY ON

FROM what source do you gain courage to carry on when worry, grief or misfortune threatens to overwhelm you? As I read the many replies to this question, with their mention of tangible sources of encouragement such as books and poetry, flowers and gardens, music and the beauty of nature, I was impressed by the fact that practically every entry contained an expression of faith in the Divine Creator and His power to help and sustain all who put their trust in Him.

I do want to thank you for the lovely thoughts which make your letters such a joy to me, and I particularly appreciate the quotations—I am sharing these with all our readers.

First place to "April Maid," Nelson, with "Janet," Manawatu, second.

First Prize

"COURAGE," says our friend the dictionary, "is that quality of mind which enables men to encounter danger and difficulties with firmness—or without fear." The word comes through the French from the Latin, "Cor," heart. What is it people so often say to one another in trying times? "Keep your heart up," and we speak of facing troubles with "a good heart" as being half the battle, and sometimes more than half.

Fortitude is another word for stronghearted bravery and endurance. It is one of the four Cardinal Virtues that are the great cornerstones upon which all true character is built. People knew about these virtues and admired and practised them before our Lord came to earth. That is why it was not necessary for Him in His teaching to say as much about them as other virtues which were neglected and despised.

All through the ages men and women—and I, too, in my small way of life—have been spurred on and given courage to smile bravely and hide trouble and sorrow, or better still, surmount and rise above them by certain things. Music is one. How often in the Homeland in days gone by I have turned to the church organ and played and listened to those wonderful notes which can only sound from a pipe organ. The music and peace of the church have calmed my troubled spirit, and I have gone forth from the Sanctuary of God with firm tread and head held erect.

Books, too, have played their part and I have been a better woman for reading that which ennobles and lifts one to a higher plane. Many lines of comfort and cheer have I read from the "Good Neighbour." I cannot leave out Nature: the "hush of the woods," the meadows, flowers and streams, the song of the birds. Through all of these there seems to breathe a Power from on high, which to the receptive heart gives courage and newborn strength.

But my greatest help of all has been from Prayer, that "breath of the soul" with Him who said, "Come unto Me all ye that are weary and heavy laden and I will refresh you."—**April Maid, Nelson.**

Second Prize

IT IS not given to everyone to have windows through which to behold marvellous views to uplift the soul and refresh the tired mind. There are many whose duties lie mostly in the hot kitchen, hurrying to and fro preparing meals, minding babies, washing dishes, and generally bearing the heat and burden of the day. Never a day runs to schedule and often the hours are long and nerves stretched with endless strain. Just to get away for half an hour would be a help, but there is no time for a break.

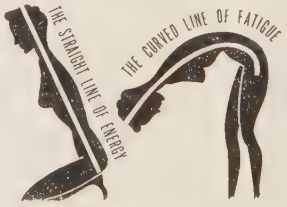
May these not have a window? Yes, surely they may. In times of stress, close the eyes—and look for a few moments at a mental picture of a beautiful little waterfall that drops gently into a pool below, by which cool ferns dip their fronds, and the birds sing their song of enchantment. If it is wintertime the mental scene may be changed, and one may enter in imagination a sunlit room. How warm and comforting it is. Nothing jars here; a quiet peace enfolds one like the blessing of God. And truly He is here, waiting to speak with us, to comfort, restrain and sometimes reprove. Two of His teachings stay with me—"Rest in the Lord—wait patiently for Him"; and, "Learn to endure hardness, as a good soldier"—surely good verses to aid one in times of stress. —**Janet, Manawatu.**

FINE books and poetry are a source of relaxation and refresh one's mind, helping one over many a stile of worry and strain. For many years I have counted an old black-covered scrapbook among my dearest possessions. In it I have gathered verse and thoughts of beauty and hope, bequeathed to humanity by great and noble minds. I have many times gained inspiration from its pages. Misfortunes themselves can be numbered among our blessings for their purpose is to test and mould our characters. Who can measure the value of a friendship? The handgrip of a friend links one's soul to another's and in times of trouble the sympathy of a friend is one of the greatest blessings of life. —**Faith, Wanganui.**

THERE'S A KNACK IN IT

So much has to be done. You go all out — and in no time you're 'all in'. Save your strength. There's a knack about most labour which once acquired lightens the work no end — and actually improves the figure. Stooping over with a curved spine simply invites fatigue. Remember, the straight spine's the strong line, whether you are standing, kneeling, bending or sitting. A slumped chest is cheated of its full supply of oxygen, cramped digestions can't work, strained back muscles develop aches. But . . . straighten that spine, pull in that chin, tuck that rear under like a spanked puppy (and when you bend, bend from the hips like a native woman, as nature intended you to do), and you can hoe in to your heart's content. You'll finish only pleasantly tired, not dragged down with fatigue and exhaustion. *And* — it's done the figure-work of beauty-exercises galore!

Berlei's five fundamental types and their variations came from the need for good posture, for only with good posture can you have better poise, carriage, health - and a beautiful figure. And only in your right type Berlei can you feel how wonderfully right Berlei is when they say "your Berlei is the fundamental foundation of good posture". Do keep on trying for your right type garment—it's vital.



Berlei
TRUE-TO-TYPE FOUNDATIONS

ONE VERY strong source of courage is the belief that the worthwhile things of life persist beyond the world's calamities, that tragedy, death and defeat are not the end. Somewhere in that ethereal world of unseen wonders which has given us spiritual miracles and scientific gifts, such as X-ray and wireless, is a life which perpetuates this and fulfils its frustrations. I am sure that we all hold this secret faith in common. Browning expresses it thus:

"All we have hoped or willed or dreamed of good shall exist,
Not its semblance but itself . . . .
The high that proved too high; the heroic for earth too hard,
Are music sent up to God. . . . .
Enough that He heard it once; we shall hear it by and by."

—**Madelin, Raglan.**

Competitions

MAY

Have you sent in your pet hint on domestic efficiency yet? The competition on "Kitchen Gadgets" closes on May 15th.

JUNE

When the sun goes down early and the air becomes bleak so that you are glad to get indoors out of the cold, how do you occupy yourself during those long, cosy hours by the fireside? Do you extend your general knowledge by reading, or do you attack the family mending? Does knitting or fine embroidery keep your fingers busy, or have you some particular hobby in which you indulge? Let me have your answers by June 15th.

"HOW I SPEND THE WINTER EVENINGS."

The first prize is 10/- and the second is 5/-.

"MARY,"

C/o. "Journal of Agriculture,"
P.O. Box 3004, Wellington.

ONE THING which gives me courage to carry on when nothing seems worthwhile is the smile of my six-months-old baby. To pick her up and hear her gurgle with laughter is one of the loveliest and happiest sounds on earth, and it makes me forget my troubles. I think a babe is God's greatest gift to woman.—**Pipi Bank, Auckland.**

THE knowledge that another has tasted the same bitter fruit can help immeasurably. The beauty of art in all its forms is a great comfort and gives courage because it takes one out of oneself. Such homely things as letters may mean all the difference between one mood and another. Bible passages offer a wealth of promise and comfort even to unbelievers who must surely be struck by the simplicity of the language and the quiet faith in the words.—**Medea, Havelock North.**

"I KNOW as my life grows older,
And mine eyes have clearer sight,
That under each rank wrong, somewhere
There lies the root of Right;
That each sorrow has its purpose
By the sorrowing oft unguessed,
But as sure as the sun brings morning,
Whatever is—is best."—Ella Wheeler Wilcox.

From **Roundabout, K.C.**

THE MIND has a big part to play in our attitude to life's difficulties. A calm mind means courage, and if we remember that trials and difficulties build character, that it is not what happens to us that really matters, but the manner in which we react to things that counts, then we indeed build courage and endurance into our lives. —**Trudie, New Plymouth.**

THE days ahead have very real problems which must be met and lived through no matter the sorrow or worry, so I take just one day at a time and grapple with that. For we don't have to take life in such large slices that contain an overwhelming sense of burden if things go wrong. Those hours between working and sleeping which can seem so long, are sufficient to cope with at a time. Who knows what recompense to-morrow may bring! Just follow step by step till the burden eases, and that courage so necessary to help one "carry on" will come back in a flood tide and life again will be good to live.—**Tiggetty Boo, Katikati.**

PRAYER gets things done.
The things that are impossible with men
Are possible with God,
For those for whom you pray in life's dark hours,
Hope's star shines brightest in a moonless sky.

From **Peggy, Pleasant Point.**

TO-MORROW.

Grass will grow quickly over much-scarred earth,
Hiding the wounds beneath a shawl of green—
Until what once was gaunt and brown and bare
Becomes a place that's lovely to be seen.
Courage is like this, too, for it can heal
The bitterest wounds we know; until, once more
We dry our tears and set our faces sunwards
And find Life lovelier than it was before.

To bear one's troubles bravely, to lend a little aid in time of need, to accept help in the spirit in which it is given—this is the faith that grows in quiet places where neighbourliness is the greatest virtue.

—*Sunny Sal, Southland.*

Full many a race is lost
Ere even a race is run,
And many a coward fails
Ere even his work's begun.
Think big and your deeds will grow;
Think small and you'll lag behind.
Think that you can, and you will—
It's all in the state of mind.
If you think you're outclassed, you are;
You've got to think high to rise.
You've got to be sure of yourself before
You can ever win a prize.
Life's battle does not always go
To the stronger or faster man;
But sooner or later, the man who wins
Is the fellow who thinks he can.

(Author unknown.)

From *Susannah, Cambridge.*

Forgiveness . . .
With its gentle hand of mercy brings
A sense of joy, of high and noble things.

—By *Land Girl, Havelock North.*

WHEN TO-MORROW COMES.

When to-morrow comes, then we may know
The reason for frustration, pain;
Then we may understand the hurt,
The love, all seeming given in vain.
Behind the injustice of all things
There often lies a love supreme,
A love that hides the anguish sharp.
Keeps it from us in wistful dream.
Oft have we said, "I did not know,"
Yet have not known more often still.
Thus, if to live seems all in vain
Let not our souls with hatred fill:
Have faith that when to-morrow comes
We then may know.

From *Faith, Wanganui.*

God has not promised skies ever blue,
Flower-strewn pathways always for you.
God has not promised sun without rain,
Joy without sorrow, peace without pain.
But He hath promised strength from above,
Unfailing sympathy, undying love.

—From *Effie, Murchison,* and *Hazel Dell, Nelson.*

It's all in the state of mind.
If you think you are beaten, you are;
If you think you dare not, you don't;
If you think you'd like to win, but you can't,
It's almost a "cinch" you wont;
If you think you'll lose, you've lost;
For out in the world you'll find
Success begins with a fellow's will—
It's all in the state of mind.

He that shoots at a high mark, though he comes short, yet shoots higher than he that aims but at a wall.

—*Sir John Eliot.*

Once upon a time

There was a lady who was baking a very special sponge for a very important supper. Well, this lady had just mixed in the Baking Powder when she heard a crash and then silence, and then a terrific caterwauling, and she said "My goodness," and rushed into the front room. Well, when little Lennie had been comforted and she had fixed things up, which took about half an hour — you know how time flies— back she came to finish the mixing of this sponge we are talking about, and she popped it in the oven and timed it to the tick, and when she opened the oven door the sponge was as flat as a pancake. And do you know why? Because pre-war Baking Powder started working as soon as it was mixed, and sometimes worked itself out before it got in the oven, which caused many failures one way and another.

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Mary's Mixing Bowl

Easter "Eats"

WHETHER you are expecting a houseful of visitors or merely one of the family home on leave you will want something special in the way of "eats" during the Easter period. If you are wondering however you can cope with the baking problem under the present rationing system, take heart and try making your butter ration go three times as far by melting it and adding equal parts of melted lard and beef dripping. When this has been well mixed together and left to set again, you will find it excellent for use in the following recipes:—

HOT CROSS BUNS.

8oz flour, ½ teaspoon salt, 2oz sugar, 1oz butter, ½oz yeast, 3 teaspoons mixed spice, 1oz sultanas, 1 egg, ½ cup milk.

Stir the yeast and ½oz of sugar together till they form a liquid and mix in the ½ cup of milk, previously warmed slightly. Sieve the flour and add the remaining dry ingredients, including the sultanas, and pour in the yeast mixture, followed by the butter (melted) and egg. (It is advisable to heat your mixing bowl before preparing the bun mixture.) Now leave it in a warm place till the dough has risen and is twice its previous size. Knead the mixture with your hands for about five minutes or so before shaping into rounds for buns and marking crosses thereon with a sharp knife. Put the tray of buns in the warm for ten minutes before brushing with beaten egg and remarking the crosses if necessary; then bake 10-12 minutes in a hot oven (temperature 450 F.). Brush with a little melted butter as soon as they come out of the oven and leave on a wire tray to cool.

CHOCOLATE BUNS.

3oz butter, 3oz sugar, 6oz flour, ¾oz cocoa, 1 teaspoon baking powder, vanilla essence, 6 tablespoons milk (approx.).

Cream the butter and sugar, then sift the flour and add with the other dry ingredients. Beat the egg together with the milk (you may not require the full 6 tablespoons) and stir into the mixture, beating it thoroughly. Pour into greased patty-tins and bake in a moderate oven for 20 minutes. When cold, ice with chocolate icing and top with chopped raisins and walnuts.

EASTER LILIES.

2oz flour, 3oz sugar, ½ teaspoon baking powder, pinch of salt, 2 eggs.

Beat the eggs and salt; add the sugar and continue beating till thick. Sift in the dry ingredients, mix well. Cover your oven-tray with greaseproof paper, then place spoonfuls of the mixture, sprinkling slightly with castor sugar. Bake about 12 minutes. Turn the paper upside down and brush over with warm water, and in a few minutes the cakes will drop off. Roll into shape like lily trumpets while hot. When cool fill with mock cream.

MOCK CREAM FILLING.

1 cup milk, 2 tablespoons cornflour, 2½oz butter, 3oz icing sugar, vanilla essence.

Mix the cornflour with a little of the cold milk, bring the rest of the milk to the boil and stir in the cornflour. Leave to cool. Beat together the butter, icing sugar, and vanilla, and add the cornflour mixture gradually. Whisk with a beater till the cream is thick and nicely blended.

SIMNELS.

3oz butter, 4oz sugar, 8oz flour, 4oz currants, 1 egg, 1 teaspoon baking powder.

Cream the butter and sugar, add the beaten egg and the other ingredients to form a stiff dough. Roll out on to a floured board and cut into oblong shapes. Bake 12-15 minutes in a moderate oven. (These can be eaten plain or buttered.)

LENT BISCUITS.

4oz flour, 2½oz sugar, 2oz butter, 1½oz peanut butter, milk to mix.

Sift the flour and add the sugar and rub in the butter and peanut butter. Use a little milk to mix. Roll out thinly on to a floured board and cut into rounds. Bake at a low heat 18-20 minutes. When cool fasten together with jam, or a filling made of icing sugar, 1 teaspoon coffee essence, and enough milk to mix the icing sugar to a suitable consistency for spreading.

CINNAMON BREAD.

5oz flour, 2oz sugar, 1oz butter, ¼ teaspoon salt, 1¼ teaspoons baking powder, 1 egg, 2 tablespoons milk.

Sift the dry ingredients and rub in the butter. Mix all together with the egg and milk. Roll out and press in to a buttered sandwich tin and bake for half an hour. When taken out of the oven, brush with melted butter and a mixture of 1 teaspoon each of sugar, cinnamon, and coconut.

LEMON TARTS.

Pastry:—4oz flour, ¼ teaspoon salt, 4oz cooked potato, 2 oz butter, 1 teaspoon baking powder.

Rub the butter into the sifted flour, add the baking powder, then rub the sieved cooked potato lightly into the mixture till it forms a firm dough (use a little water for mixing if necessary, but it is seldom required).

Roll out and line greased patty tins, adding lemon filling. Bake in a moderate oven.

LEMON FILLING.

Melt 1oz butter, add 2oz sugar, 1oz cornflour blended with cold water, and bring to the boil, stirring constantly. Now add a beaten egg and cook (without reaching boiling point) for a further minute. Lastly, add lemon flavouring to taste (either fresh lemon juice or lemon essence; a little grated lemon rind gives a nice flavour).

GOOD FRIDAY CAKE.

¼lb butter, ½ cup sugar, 2 eggs, 1½ cups flour, ½ cup milk, 1 large teaspoon baking powder.

Beat the butter and sugar to a cream, then the eggs already beaten. Stir in the sifted flour and baking powder, adding the milk gradually to make a silky mixture. Pour into a well-greased cake tin and bake in a fairly hot oven for ¾ hour. Ice when cool with boiled icing.

BOILED ICING.

¾ cup sugar, 2 tablespoons milk, 1 teaspoon butter.

Place in a saucepan and bring to the boil, then beat till thick and suitable for spreading. Decorate with coconut, cherries, or walnuts.

Perhaps you are bothered over your dinner menu—well, here are a few ideas to help you. Incidentally, these two mutton recipes will enable you to obtain the utmost value from your meat ration.

MUTTON RICE.

1lb mutton (shoulder is best), 3 cups stock or vegetable water, 1 cup rice, 2oz dripping, 2 onions, pinch allspice, seasoning.

Cut the meat into small pieces, chop the onion, and brown together in the dripping. Drain well before adding the stock, then bring to the boil and simmer for an hour. Wash the rice and fry in the remaining dripping, adding more fat if necessary. After draining the rice, add it to the mutton, season to taste, add the allspice, and cook till the rice is soft (about 25 minutes). Take the lid off the saucepan and, stirring frequently, continue cooking till all the stock has been absorbed (watch carefully to see that the mixture does not burn). Now press the mixture into a basin which has been previously heated, let stand for a little while with a saucer and a weight on top, and then turn out the mould on to a hot dish and serve with vegetables.

VITAMIN SOUP.

Mutton bones, 3 cups stock or vegetable water, 1 onion, 1lb carrots, parsley, seasoning, cornflour, milk.

Slice the carrots and onion and simmer with the mutton bones and seasoning till cooked. (If you can spare a root of parsley, cut it in two and add to the soup—parsley water is particularly rich in vitamins.) Now remove the bones and parsley root and rub the remainder through a sieve. Place on the stove again and bring to boiling point, then add one dessertspoon cornflour mixed with a little milk, stirring well till the soup thickens. Serve very hot with chopped parsley sprinkled thickly on top.

Has your family become tired of the conventional lettuce and tomato salad?—then see how they respond to a salad served hot.

HOT VEGETABLE SALAD.

Cabbage, potatoes, carrots, beans, onions, egg, bacon, ¾oz flour, 2 teaspoons sugar, salt, vinegar.

Prepare the vegetables and cook them lightly, then arrange them in a fireproof dish in layers, finishing with a topping of fried bacon rashers and slices of hard-boiled egg. Over this place a layer of sliced cooked potato. Make a sauce of one cup of hot water, ¾oz flour, and 2 teaspoons sugar mixed with a little vinegar and salt to taste, and pour over the vegetables. Place lid on the dish before putting in the oven, and heat for 15-20 minutes prior to serving.

A variation on an old theme—a savoury custard tart instead of the usual sweet one.

SAVOURY CUSTARD TART.

Pastry, 1½ cups milk, 1 egg, 1oz cheese, salt and pepper.

Line your pie plate with pastry. Then beat an egg and add to a cup and a half of milk, plus seasoning to taste and 1oz grated cheese. Pour into pastry lining and bake in a slow oven till set. Garnish with parsley when serving.

Something sweet with which to finish:—

FRUIT SHORTCAKE.

¼lb flour, ¼lb cornflour, 3oz sugar, 1 egg, ¼lb butter, 1 teaspoon baking powder.

Rub the butter into the flour, add the dry ingredients, and mix to a firm dough with the beaten egg. Roll out into two rounds and trim to fit two sandwich tins. Bake in a moderate oven. These can be filled with fresh or stewed fruit as desired.

STEAMED CHOCOLATE PUDDING.

2oz butter, 2oz sugar, vanilla essence, 1 egg, 5oz flour, 1 teaspoon baking powder, 1oz cocoa, ½ cup milk.

Beat the butter and sugar to a cream and add the egg, then the dry ingredients and the vanilla. Place in a greased basin and steam 1½ hours. Serve hot with chocolate sauce.

CHOCOLATE SAUCE.

Blend 1 teaspoon cornflour and 2 teaspoons cocoa and 1 tablespoon sugar with a little milk, and stir into 1½ cups boiling milk. Cook 3 minutes.

BAKED RABBIT.

Choose a rabbit not too big. Cut in pieces, and put in a pie dish with a layer of scalded sliced onions, cover with milk, sprinkle with parsley, and breadcrumbs. Top off with small pieces of fat bacon and cook at least two hours in a covered dish.—**Kahikatea, Marton.**

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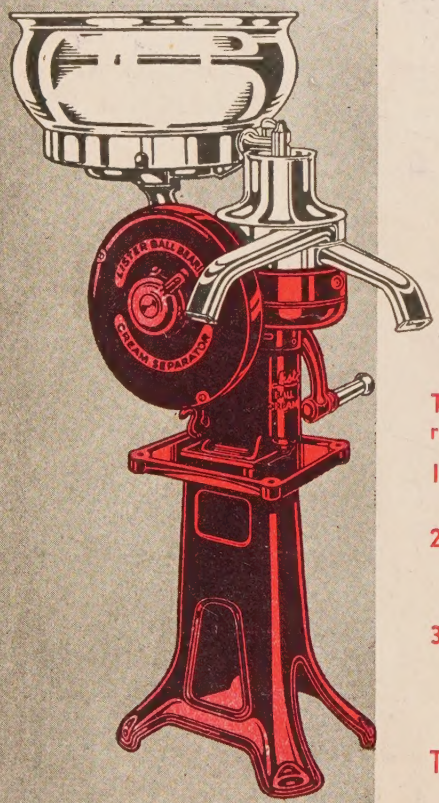

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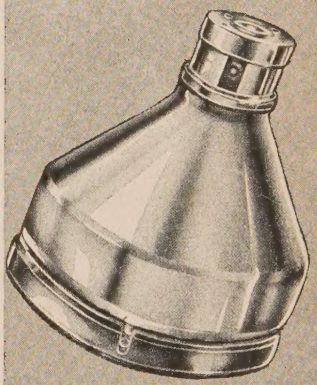

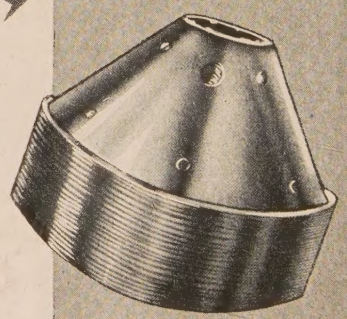

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